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Zoogoer
For members of **FRIENDS OF THE NATIONAL ZOO**
JAN | FEB | 2014

The animal that started it all returns to celebrate the Zoo's 125th anniversary.

BIG. BOLD. BISON.

» Winter Naps
» Playful Pandas
» Gigantic Fish

Bleating.
Honking.
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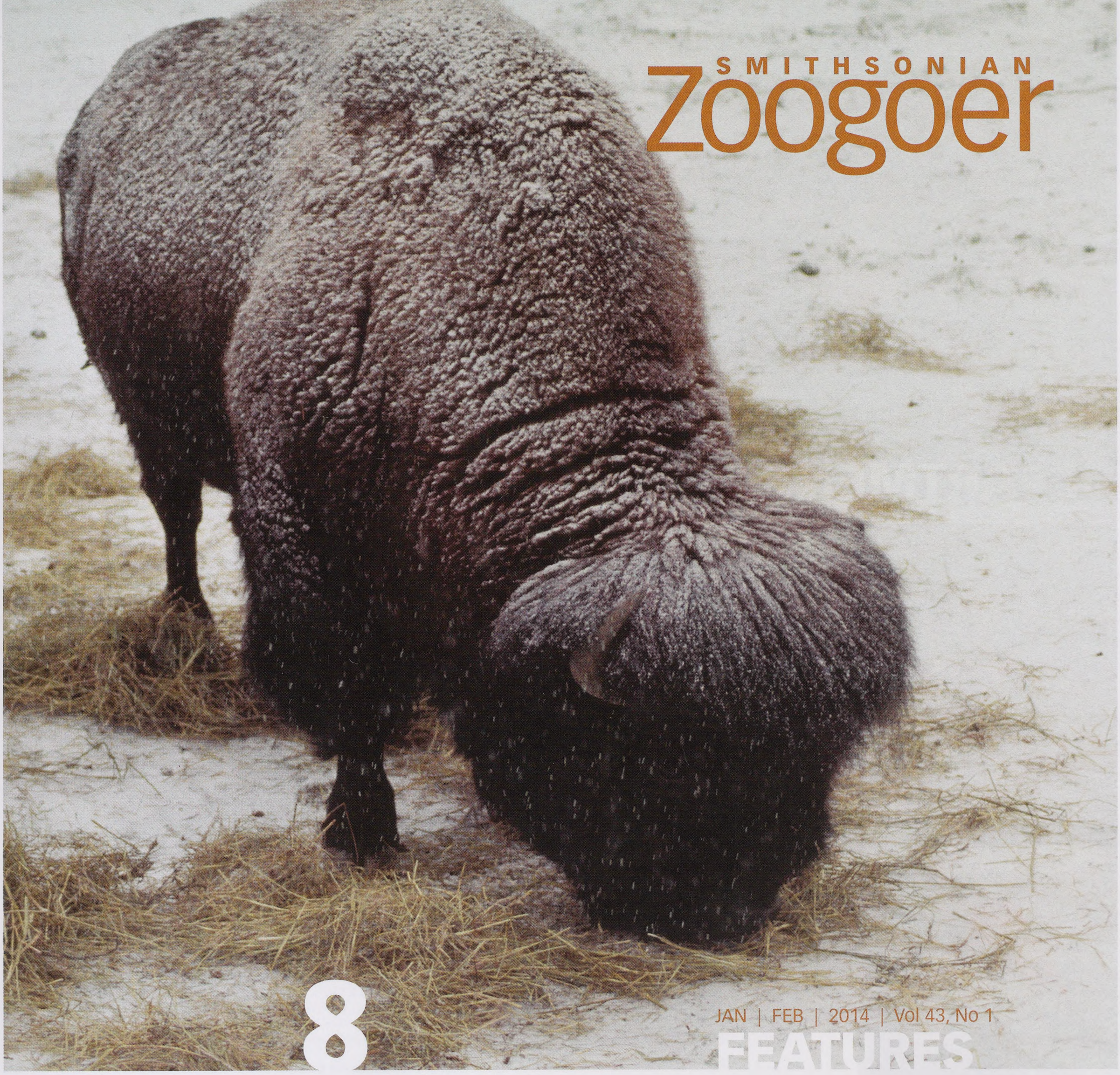
Handstands.

FIND OUT WHAT GETS PANDAS IN THE MOOD FOR LOVE.
In celebration of Valentine's Day, learn about animal mating and dating habits from our experts. **Join us February 14, 2014.**
Buy tickets at fonz.org/woo.

WOO AT THE ZOO



JESSIE COHEN/NZP

SMITHSONIAN
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MEHGAN MURPHY/NZP

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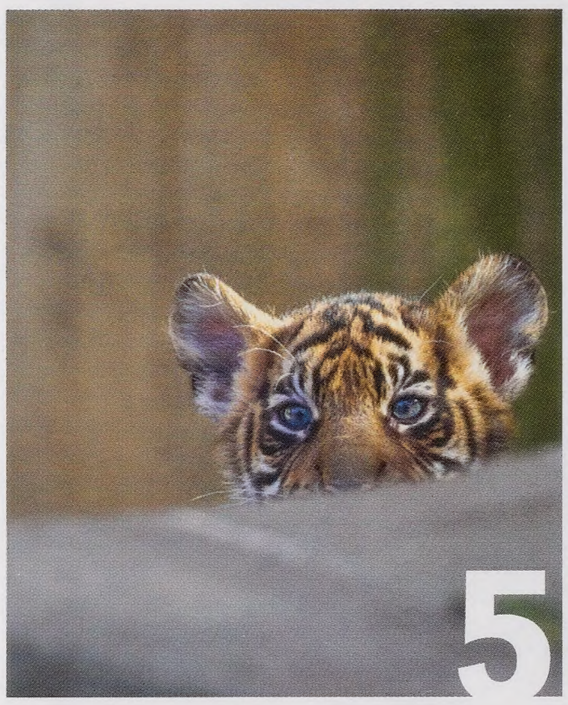

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SMITHSONIAN
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FONZ Friends of the National Zoo is the dedicated partner of the Smithsonian's National Zoological Park. FONZ provides exciting and enriching experiences to connect people with wildlife. Together with the Zoo, FONZ is building a society committed to restoring an endangered natural world. Formed in 1958, FONZ was one of the first conservation organizations in the nation's capital.

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Membership in FONZ supports the animal care, conservation, and educational work of the Smithsonian's National Zoo. It also offers many benefits: a *Smithsonian Zoogoer* subscription, discounts on shopping and events, discounted or free parking, and invitations to special programs and activities. To join, call 202.633.2922, or visit **fonz.org/join.**

Membership categories

Green	$55
Basic	$60
Premier	$80
Premier+	$110
Patron	$250
Sponsor	$500
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National (for those outside a 200-mile radius of Washington, D.C.)	$50

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On the cover: Bison are the largest land mammal in all of North America.
PHOTO BY DANNY GREEN/NATUREPL.COM

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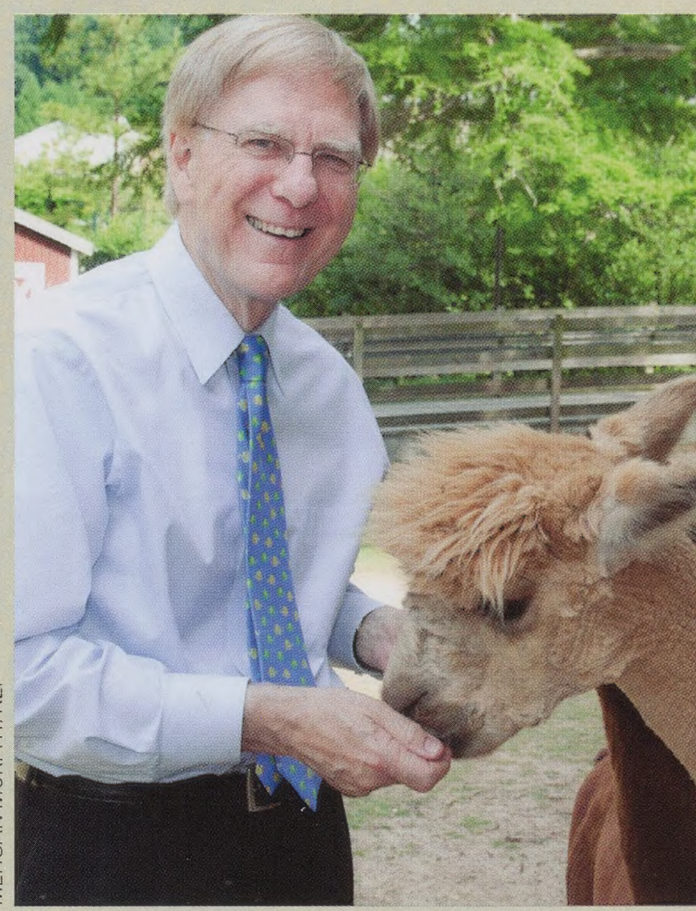
HAPPY NEW YEAR. LET'S TALK SUMMER.


MEHGAN MURPHY/NZP

AS I WRITE THIS LETTER, WE'RE FAST APPROACHING THE HOLIDAYS. By the time you read this, we will have passed that milestone and turned the calendar to a new year. Here at FONZ, we're excited to be starting this year for many reasons, including this: 2014 marks the Zoo's 125th anniversary (see p. 4 for more). We couldn't be more pleased for the Zoo, nor could we be more proud of the work that we—and you—do to support the Zoo every day.

We weren't around in 1889 when the Zoo became a reality. Friends of the National Zoo came later—1958—when the Zoo needed help, and a group of local citizens joined together to provide it. Since then, we've helped the Zoo secure funding, host events, exhibit new animals, and reach more visitors, like you. We've also developed an education program that started with tours for preschoolers, and has grown to a full selection of camps, classes, and overnight opportunities. I'm especially proud of these educational programs—today's children will be tomorrow's scientists, conservationists, and zoo keepers.

If your family includes children, you may want to check out our spring and summer camp options starting on page 31 in this issue. Our Safari Day Camps welcome students in grades K-7 to spend a week exploring science, adventure, and creativity at the Zoo during their spring or summer school vacations. Students entering grades 5-10 next fall may be interested in Nature Camp—our summer sleep-away camp offered at the Smithsonian Conservation Biology Institute in Front Royal, Virginia. This one- or two-week long program offers campers a chance to live, explore, and learn with SCBI's scientists, veterinarians, and animal keepers. Check out our spring and summer camp offerings on pages 31–35 of the issue, or online at **fonz.org/camps**.

Many of our more popular camps book up quickly. As a FONZ member, you enjoy the opportunity to register for camp before non-members. Even better, FONZ Premier+ members are invited to register a full week earlier than other FONZ members, increasing the odds that you're able to enroll your child in the camp of his or her choice. Want to jump to the head of the line? Simply upgrade your membership to Premier+ either online at **fonz.org/join** or by calling 202-633-2922.

Speaking of the summer months, it's not too late to contribute to our big 2014 project for the Zoo's 125th anniversary: bison! We are still accepting donations to help the Zoo bring back bison this year. You can help too; visit **fonz.org/125bison** to donate.

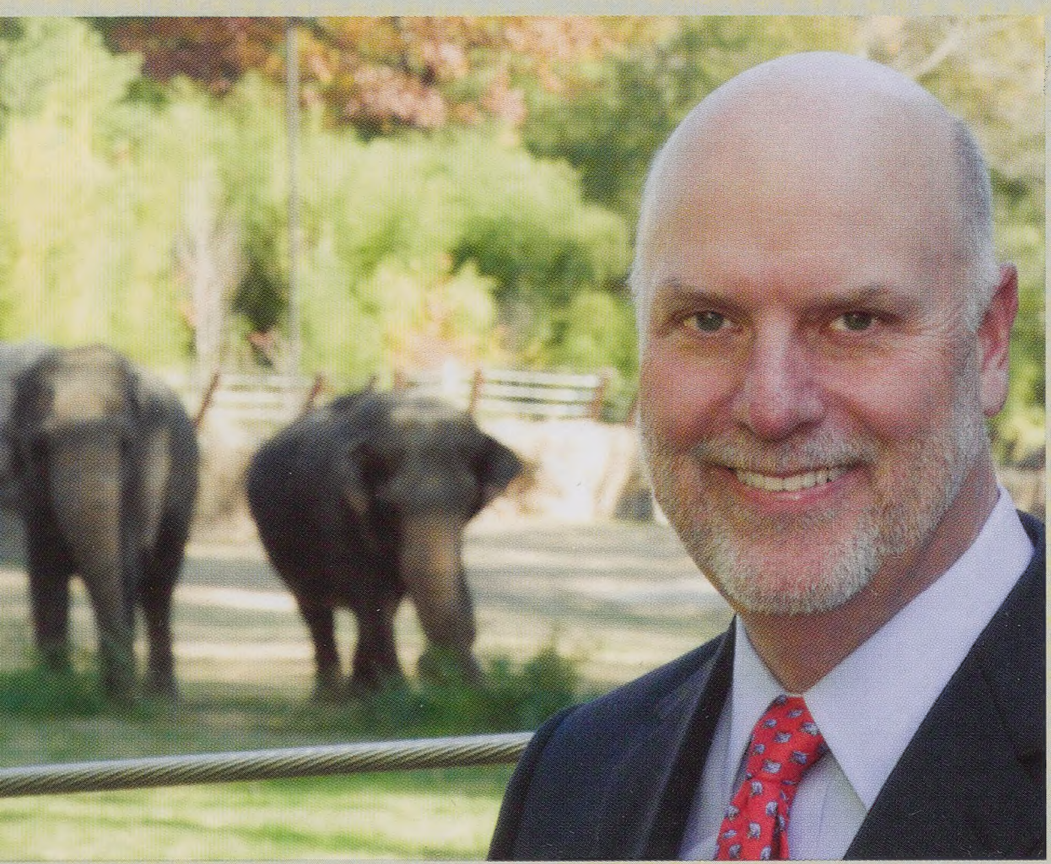
It may seem silly to be thinking of summer when we still have so much winter ahead of us. But, the spring thaw will be here before we know it, followed quickly by summer heat. As the saying goes, time flies when you're having fun—and here at the Zoo, we are always working hard to make sure your visits are both fun and enlightening! We hope you and your family will come see us, either for a visit this winter, a camp this summer, or both!

Sincerely,

Bob Lamb

Bob Lamb
Executive Director, Friends of the National Zoo

125 CANDLES ON OUR BIRTHDAY CAKE



MEHGAN MURPHY/NZP

THIS IS GOING TO BE A GREAT YEAR. As we flip our calendars ahead to 2014, we're also looking back 125 years to 1889. That year, on March 2, President Grover Cleveland signed a bill creating the National Zoological Park. The journey from 1889 to 2014 has been amazingly fun, occasionally challenging, and always rewarding. Even as we celebrate this anniversary, we're already thinking ahead to our next 125 years.

But, first, there's 2014. It's not every year that we turn 125, and we're determined to celebrate this milestone properly. We have a full year's worth of exciting events and coming attractions planned at the Zoo.

Our big focus for 2014 is very big: bison. These impressive animals were the inspiration for the National Zoological Park. They are where we began, quite literally—bison were among the first animals we exhibited, back when the Zoo was still a small affair on the National Mall. We've come a long way since then, and now we're circling back to bison. Our exhibits team and animal care staff are already working on plans to bring bison back to the Zoo. We anticipate an exhibit opening this summer or early fall. In the meantime, you can read more about the history of bison at the Zoo and in the United States on page 8. If you'd like to help bring bison back to the Zoo, you can contribute online at **fonz.org/125bison**.

We're also celebrating another species this year. Their history with the Zoo doesn't date back 125 years, but our giant pandas are an important part of our culture today and our plans for the future. How fitting that our 125th year sees us welcoming our second panda cub into the Zoo family. Mei Xiang's second cub, a female who has been aptly named Bao Bao (meaning precious or treasure), was born August 23, 2013. She has spent the first few months of her life behind the scenes in the panda house, growing stronger and bolder every day. Now, in 2014, she's ready to meet her extended Zoo family. We expect she will begin spending time out in her exhibit in January. The very first viewing opportunities will be reserved for FONZ members—our way of saying "thank you" for all your support. Please visit **fonz.org/membernews** for updates.

As excited as we are about our bison and pandas, those are just two of our many stories. That's why every issue of *Smithsonian Zoogoer* this year will include at least one feature article that brings a bit of our history to life. We start the series with bison in this issue (pp. 8-13), and will continue with even more in upcoming issues. We have some great stories to tell.

These are just a few of the things we are already looking forward to in 2014. We'll share more updates in future issues of *Smithsonian Zoogoer*, online at **fonz.org**, and through our social media feeds. It's going to be a great year!

Sincerely,

Dennis Kelly
Director, Smithsonian's National Zoological Park

Our Precious Treasure

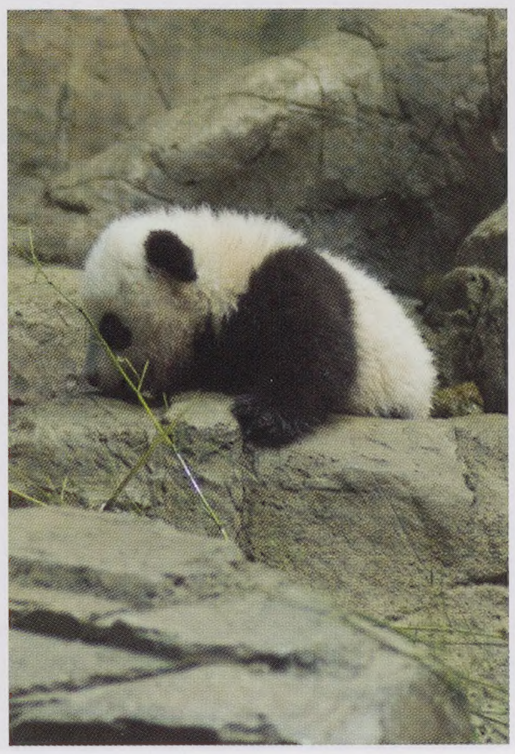
You voted and we listened. Mei Xiang's beautiful baby girl has a name that suits her perfectly: Bao Bao. The name means precious or treasure, which is fitting because she certainly is a precious treasure.

ABBY WOOD/NZP

MEET THE PANDA CUB!

Join us for special member-only viewing opportunities beginning in January.

Visit fonz.org/membernews for more information.



ABBY WOOD/NZP

FONZ PANDA PREVIEW!

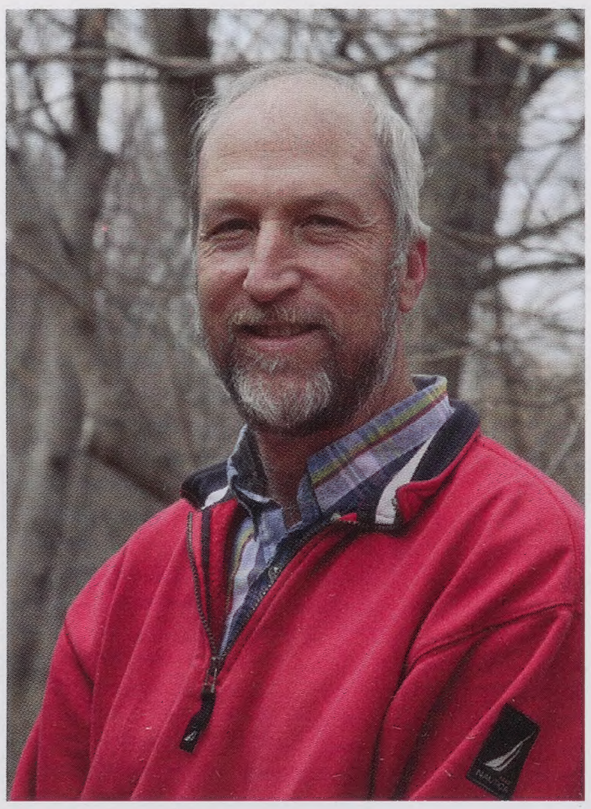
Be among the first to meet Bao Bao during our exclusive member-only preview event!

JANUARY 11–17
8 a.m.–4:30 p.m

JANUARY 21–TBD
8–9:30 a.m. for FONZ members only
10 a.m. open to the public

Please bring your current FONZ membership card with matching photo ID. Animal behavior, weather, and other factors may affect cub viewing. We will do our best to keep you informed and apologize if the panda cub is not visible during your visit to the Zoo.

More details online:
fonz.org/membernews



JESSIE COHEN/NZP

In Memory of Russ Greenberg

It is with great sadness that we announce the passing of Russ Greenberg, 1953-2013, founding director of the Smithsonian Migratory Bird Center. He was a visionary and an innovator. Greenberg was among the first to recognize a precipitous decline in neotropical migratory bird populations. He then pioneered the concept of shade-grown coffee as a bird-friendly product and helped develop the rigorous science-based criteria now used when selecting Smithsonian Bird Friendly Coffee. In August 2013, Greenberg was awarded the annual Elliot Coues Award by the American Ornithologists' Union in recognition of his outstanding contributions to avian research and conservation.

Greenberg's dedication to birds began in his childhood—he started his birding life-list at the age of eight—and continued throughout his life. Equally passionate about encouraging and supporting graduate and post-graduate training, Greenberg served as a mentor or advisor to more than 70 postdoctoral scholars, graduate students, and research interns. In honor of Greenberg's memory, the Zoo has established the Russ Greenberg Fellowship Fund at the Smithsonian Migratory Bird Center. This fund will support graduate and post-graduate training, ensuring that Greenberg's work and vision continues. If you wish to contribute, please contact Lesli Creedon at 202-633-3022 or creedonl@si.edu.

Greenberg is survived by his wife and two children. Our thoughts are with them.

New Papa Bear

The Zoo's female Andean bear, Billie Jean, has a new beau: Cisco. The handsome hunk is 20 years old, and hails from the Wildlife Conservation Society's Queens Zoo. Cisco arrived at the National Zoo in September and has settled in well. Keepers hope he will successfully woo Billie Jean in spring 2014. In the meantime, you can stop by and meet Cisco at the Andean bear exhibit.

JANICE SVEDA

Two Tigers on Exhibit

Bandar and his sister, Sukacita, passed their swim test November 6. This test, which proves the cubs are strong enough to pull themselves from Lion/Tiger Hill's water-filled moats, is a requirement for all lions and tigers born at the Zoo. By passing their test, the cubs demonstrated they were ready to start safely exploring the outdoor exhibit space with their mother, Damai. They made their public debut on November 18, and are now on exhibit every day at Lion/Tiger Hill, weather permitting.

BARBARA STATAS

CRISTINA SANTIESTEVAN

Scientific Tree Huggers

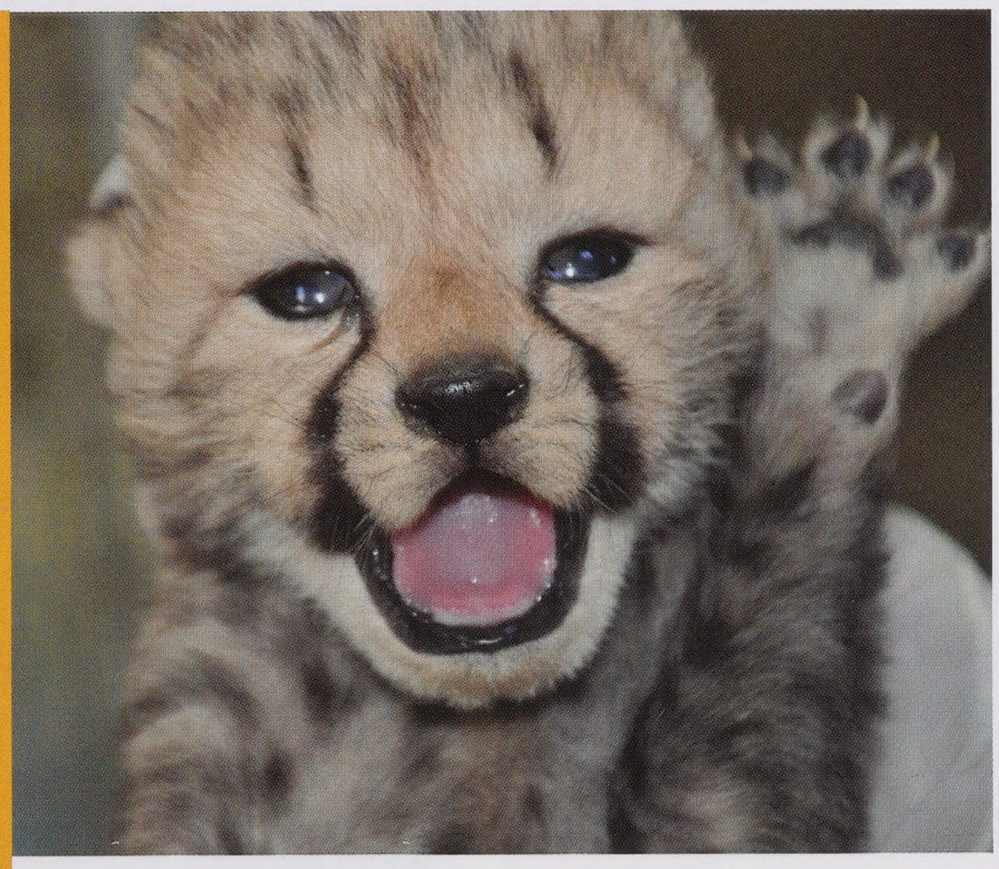
What do scientists do when they want to know how many trees are in a forest? They count them, of course. After 10 months, and with the assistance of six field biologists, scientists at the Smithsonian Conservation Biology Institute now know that the 64.25-acre SCBI Forest Dynamics Plot contains over 39,000 living trees and shrubs with a diameter-at-breast-height (DBH) of one centimeter or more. Because some trees and shrubs have more than one trunk or stem, the census takers measured, identified, and labeled 55,000 trunks in total. The data collected from this twice-a-decade census will help scientists better understand how forests vary across habitats and around the world. Ultimately, this plot and others like it may provide answers about carbon storage, responses to climate change, endangered species conservation, and more.

Two Litters. Ten Cubs!

It's been a spot-filled winter so far at the Smithsonian Conservation Biology Institute, where staff and volunteers are celebrating the births of ten healthy cheetah cubs.

First-time mother Miti gave birth to a litter of seven cubs on November 12. This is a remarkably large litter for cheetahs, and we are pleased to report that six of the seven cubs—five females and one male—have survived and are doing well. This birth was followed by a second litter of four cubs born to experienced cheetah mom Ally on November 26. All ten cubs are doing well, growing rapidly, and keeping their mothers very busy.

Cheetahs are considered vulnerable to extinction in the wild, where they are threatened by habitat loss, human hunting, and low genetic diversity, which leads to an increased risk of disease. The spotted cats are difficult to breed in zoo environments, and these ten cubs will contribute greatly to the population of cheetahs in the United States. SCBI is a leader in cheetah research, and devotes a significant amount of research toward improving cheetah breeding successes in captivity and conservation successes in the wild.



AMBER DEDRICK/NZP

SMITHSONIAN'S NATIONAL ZOO

Mark Your Calendar

JAN. 11–17
Meet the Panda Cub!
FONZ members get a sneak peek at Bao Bao before she makes her public debut. **fonz.org/membernews**

JAN. 23
Priority Camp Registration
FONZ Premier+ priority registration begins for Nature Camp and Spring and Summer Safari Day Camps. **fonz.org/camps**

Upgrade your membership to Premier+ or higher to qualify for priority registration and ensure your child's spot in his or her preferred camp. **fonz.org/join**

FEB. 4
All-Member Camp Registration
FONZ member registration begins for Nature Camp and Spring and Summer Safari Day Camps. **fonz.org/camps**

FEB. 14
Woo at the Zoo
Make this your wildest Valentine's Day celebration ever. **fonz.org/woo**

MAR. 2
Zoo's 125th Anniversary
Happy anniversary to the Smithsonian's National Zoo! You can help celebrate by donating to our effort to bring bison back: **fonz.org/125bison**

NZP ARCHIVES

IN THE BEGINNING,

Thunder once roared over the vast plains of North America. It came not from the sky but from the soil, as countless black cloven hooves pounded the ground. Those hooves belonged to the continent's largest land mammals—thousand-pound behemoths called bison.

Also known as buffalo, these herd animals undertook what ecologist David Wilcove describes as "a yearly migration from the plains, where they summered, to the river valleys and forested areas, where they wintered." Wilcove refers to this journey as one of the "two greatest migratory phenomena on earth." (Passenger pigeons, now extinct, performed the other, in his opinion.)

How numerous were those mighty migrants? No one knows. Estimates range from 30 to 60 million. What we do know is that a single century—the 1800s—witnessed the species' decline to just a few hundred survivors. Aside from its speed and magnitude, the near extinction of bison was striking for yet another reason: It was deliberate.

RIGHT: **Bison are North America's largest land mammals, and were once among the rarest.**
ABOVE: **Before the advent of today's National Zoo, bison were exhibited outside the Smithsonian Castle on the National Mall.**

JOE ALDERMAN/NZP

Bison

BY PETER WINKLER

The Smithsonian's National Zoo grew out of one man's battle to save what he considered "the most striking and conspicuous species on this continent."

IN THE BEGINNING, Bison

NZP ARCHIVES

In 1872–74, a single railway company shipped nearly 500,000 bison hides back to the East. The scale of the slaughter is further illustrated by the recollection of a rancher who traveled a thousand miles over a landscape dotted with buffalo carcasses and containing not a single live bison.

NZP ARCHIVES

FRANCES BENJAMIN JOHNSON

A War on Wildlife

"I would not seriously regret the total disappearance of the buffalo from our western plains, in its effect upon the Indians," wrote Columbus Delano, Secretary of the Interior, in 1873. Shocking as those words may sound today, they exemplify the spirit of Manifest Destiny: the widespread belief that pressing westward was the United States' fate, right, and duty.

The major obstacle to achieving that destiny was the presence of the frontier's original human inhabitants—Native Americans—few of whom showed much interest in being converted or "civilized" by the growing horde of westward-expanding settlers. In the latter half of the 19th century, that cultural collision sparked decades of violent clashes known as the Indian Wars.

One of the most fervent warriors was General Philip Sheridan, a Union veteran hardened by the "total war" tactics that shattered the Confederacy. Sheridan set about unleashing that same pitiless style of combat on Native Americans. Among his fiercest weapons was a national craze for bison hunting.

Almost anyone who could afford the cost booked passage on trains slashing across the prairies. Leaning out the window, hunters could swiftly and easily shoot bison after bison. Now and then, the trains stopped so people could collect the slain animals' skins (a valuable commodity)

LEFT: **A group of school children view a bison in this 1899 photograph.**
BELOW: **William Temple Hornaday leads a bison calf in this 1889 photograph.**

What Happened to Hornaday?

William Temple Hornaday, driving force behind the creation of the National Zoo, resigned in 1889 after clashing with the Smithsonian's new leader, Samuel Pierpont Langley. The *Washington Critic* called the 36-year-old's departure "a great loss for the government."

Hornaday and his wife moved, fittingly enough, to Buffalo, NY, where he became a real estate developer and freelance writer. Then, in 1896, came the offer of a lifetime: to join the New York Zoological Society as creator and director of what would become the Bronx Zoo. He served as its director until 1926.

Hornaday's fascinating story unfolds like a novel in the pages of *Mr. Hornaday's War*, Stefan Bechtel's recent account of "how a peculiar Victorian zookeeper waged a lonely crusade for wildlife that changed the world." Curious readers may purchase a copy at **fonz.org/hornaday.**

and tongues (a culinary delicacy). They left everything else to rot.

The extent of the slaughter is hard to grasp. One of the few statistics available hints at its enormity: In 1872–74, a single railway company shipped nearly 500,000 bison hides back to the East. The scale of the slaughter is further illustrated by the recollection of a rancher who traveled a thousand miles over a landscape dotted with buffalo carcasses and containing not a single live bison.

General Sheridan applauded the carnage in an 1874 speech to the Texas Legislature. Bison hunters, he said, were "destroying the Indian's commissary." He urged letting them "kill, skin, and sell until the buffaloes are exterminated." They nearly did.

NZP ARCHIVES

IN THE BEGINNING, Bison

JESSIE COHEN/NZP

In honor of its 125th anniversary, the Zoo is rededicating itself to another key part of Hornaday's vision: deepening Americans' appreciation for bison. Long a staple of the Zoo, bison have not been on exhibit in recent years due to construction in the park. Now, plans are underway to bring bison back to the Zoo, where visitors will come face-to-face with the animals that started it all.

You can help: fonz.org/125bison

JESSIE COHEN/NZP

Menagerie on the Mall

Not everyone shared Sheridan's sentiments. For William Temple Hornaday, chief taxidermist at the Smithsonian, news of the bison's plight came as "a severe shock, as if by a blow on the head from a well-directed mallet. I awoke, dazed and stunned, to a sudden realization of the fact that the buffalo-hide hunters of the United States had practically finished their work."

Hornaday's awakening changed his life—and that of the nation's capital—forever. The solution, he recalled later, came to him in an instant, "like a thief in the night." Washington, he concluded, needed a zoo; a haven where bison and other vanishing species could survive and breed.

Never one to hesitate, Hornaday promptly urged his employer to acquire "the nucleus of a herd of live buffaloes . . . the most striking and conspicuous species on this continent." Doing so, he counseled, would "in a small measure, atone for the national disgrace that attaches to the heartless and senseless extermination of the species in a wild state."

The Smithsonian agreed in 1887 to give Hornaday a chance, naming him as head of the new Department of Living Animals and dispatching him to collect specimens in the West. He returned with 15 animals—all indigenous species—including deer, foxes, prairie dogs, badgers, and lynx. Bison came a bit later, thanks to a donation from a Nebraska rancher.

Hornaday settled all these animals—and dozens more as they arrived—in an improvised zoo on the National Mall. Washingtonians swarmed the menagerie, delighting in glimpses of the nation's natural heritage. Two things quickly became clear. The new zoo was a success. And it was much too small.

Visions of Vistas

Nothing highlighted the limits of the Mall zoo more than a gift Hornaday had to turn down. In December 1888, showman "Buffalo Bill" Cody offered the Smithsonian a herd of 18 bison. Hornaday declined with genuine regret—and made sure the whole city knew about it.

That missed opportunity, along with Hornaday's dogged lobbying, helped spur Congress to pass a bill creating a national zoological park "for the advancement of science and the instruction and recreation of the people." President Grover Cleveland signed it into law on March 2, 1889.

Next came two bison-sized challenges: finding a home for the zoo and getting Congress to pay for it. Hornaday dove into both with his usual brash zeal. He and Samuel Pierpont Langley, the new secretary of the Smithsonian, identified a site in Rock Creek Park. Then Langley watched, astonished, as Hornaday coaxed $92,000—a fortune at the time—out of Uncle Sam.

Langley and Hornaday enlisted the country's paramount landscape architect, Frederick Law Olmsted, to design the new zoo. Of course, Hornaday couldn't resist offering visions of his own. He pictured large, naturalistic enclosures, shaped by the contours of the landscape, that would give visitors a more holistic understanding of the interplay between animals and their environment.

"I have no intention of doing that," Langley replied. What he did intend, he made clear, was to put Hornaday in his place. He unveiled a new organizational structure that demoted the bold young man. Enraged, Hornaday resigned. The Zoo went on without him, eventually growing into his vision. Hornaday, it can be imagined, would be pleased by the naturalistic exhibits that now dominate the park.

Birthday Bison

In honor of its 125th anniversary, the Zoo is rededicating itself to another key part of Hornaday's vision: deepening Americans' appreciation for bison. Long a staple of the Zoo, bison have not been on exhibit in recent years due to construction in the park. Now, plans are underway to bring bison back to the Zoo, where visitors will come face-to-face with the animals that started it all.

The task of bringing North America's largest land mammals back to Rock Creek falls, a bit ironically, to the Zoo's curator of small mammals, Steve Sarro. Having worked with bison earlier in his career, Sarro is pleased to be leading the charge

JESSIE COHEN/NZP

to bring these iconic animals back to Olmsted Walk.

To do so, Sarro has been collaborating with the American Prairie Reserve, which manages more than a hundred bison in Montana. He hopes the Zoo will be able to exhibit a pair of bison, and expects the big beasts will arrive later this year.

Pulling this off involves challenges nearly as large as the animals. Transporting any creature, especially a supersized species, means navigating a maze of logistical hurdles and paperwork. Myriad protocols govern the transfer of wildlife. Ensuring compliance requires considerable time and energy. Indeed, Sarro says the toughest part of the project is "trying to get all our ducks in a row to proceed."

While Sarro aligns those ducks, exhibit developer Cheryl Braunstein leads an interdisciplinary team tasked with, as she puts it, "making the animals more accessible." For the bison exhibit, that means "telling a huge story in a small space."

That story, Braunstein explains, is threefold. One facet is the natural history of bison. Another is their grim history in the United States. And the third is the species' starring role in the creation of the Zoo. Interviews with Zoo visitors have revealed that few knew bison once grazed in the shadow of the Smithsonian Castle, a fact that Braunstein and her team hope to change through this exhibit.

Sarro shares Braunstein's determination to create a great exhibit—"for the bison and guests both." That, he says, is both the biggest challenge and best part of the project. He's proud and glad to be part of a "good team pulling together to create an awesome exhibit."

To these challenges, Braunstein adds one more: "Bison are very significant, but they're not pandas." She and her team are working to "generate excitement and interest" in telling a tale so interwoven with America's—and our Zoo's—own. Possibilities for doing so include enriching the exhibit with life-size cutouts that will help people grasp the animals' size, and a replica of a skull. And, of course, there will be the animals themselves. Bison may not share the panda's cuddly appeal, but they have a powerful majesty that is all their own. Come face-to-face with a bison, and you will readily grasp how this incredible animal inspired the passion and devotion that ultimately led to the creation of the Smithsonian's National Zoo. SZ

—PETER WINKLER *is the editor of* Smithsonian Zoogoer.

MEHGAN MURPHY/NZP

WINTER NAPS & SUMMER SLUMBERS

CRISTINA SANTIESTEVAN

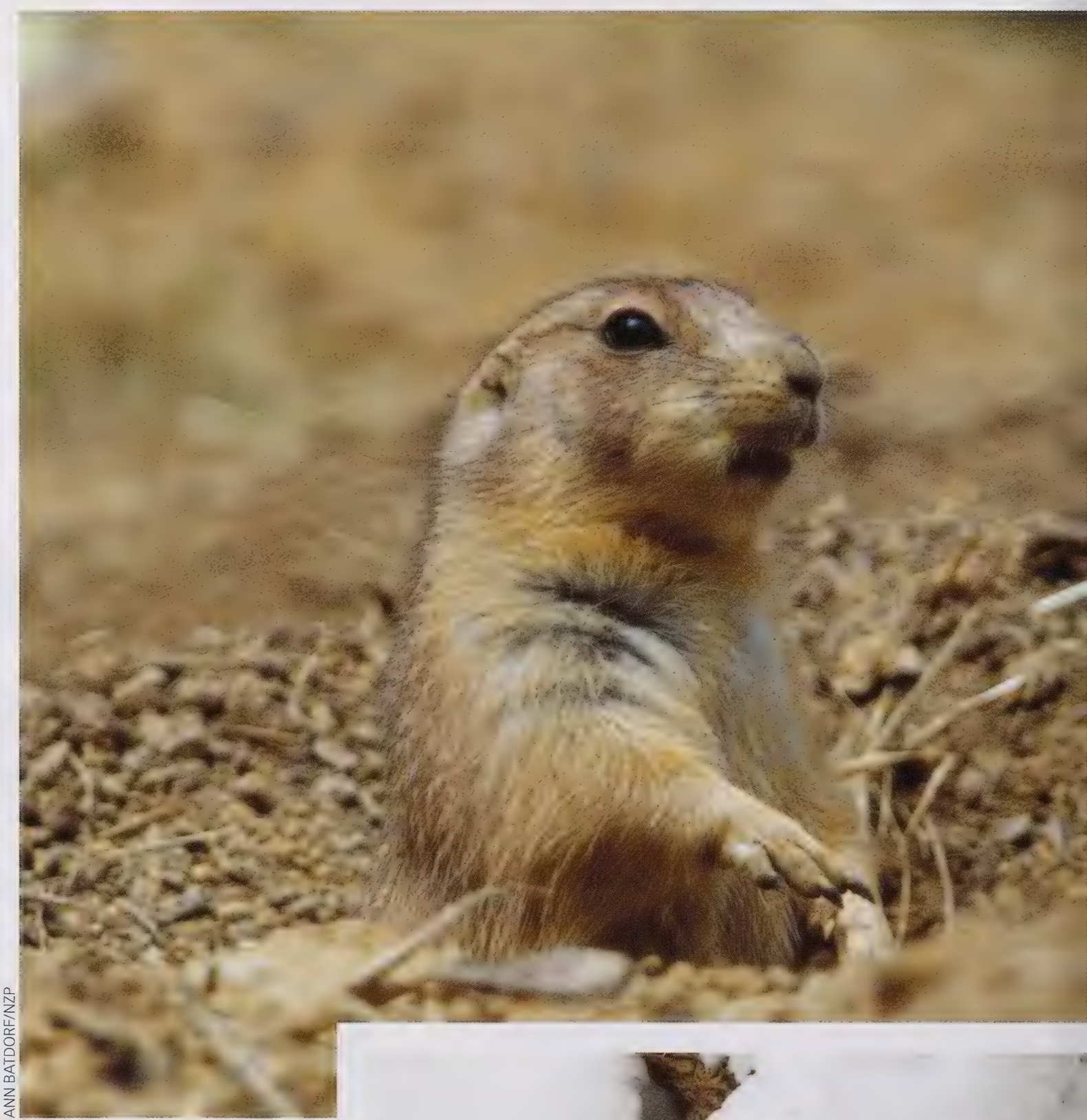
Hibernate, brumate, or estivate. Whatever the term, some animals are masters of season-long slumbering.

It looks like a sleepy hedgehog, but it's neither sleepy nor a hedgehog. The prickly creature in Ashton Shaffer's hand is a Madagascar hedgehog tenrec—so named for its hedgehog-like coat of prickly spines—and it's in a state of torpor. It would be more correct to call this hibernation than sleep, although that's not quite right either. Torpor is something else entirely; one of several distinct types of dormancy that animals may utilize in response to temperature change, food shortages, or other environmental cues.

WINTER NAPS & SUMMER SLUMBERS

"You can see that he just woke up for a couple minutes," says Shaffer, who is a keeper in the Zoo's Small Mammal House, where the tenrecs live. "Within a minute or two he'll be asleep in my hands."

If you visit the Smithsonian's National Zoo between September and March, you're unlikely to see any Madagascar hedgehog tenrecs. That's because the Zoo's tenrecs will be behind the scenes, dozing through the winter months. They are the only animal at the Zoo to do so.



ANN BATDORF/NZP

A Long Winter's Nap?

Ask a child about hibernation, and you're likely to hear about how bears and squirrels sleep through the winter in their snug dens. Ask an adult about hibernation, and you're likely to get a similar answer. These answers are not really wrong, but they are incomplete.

Bears and squirrels do hibernate. So do prairie dogs, skunks, and hedgehogs—not to be confused with Madagascar hedgehog tenrecs. It's just that hibernation is a bit more involved than a regular night's sleep. In fact, hibernating animals are not really sleeping. They are dormant. Their metabolism is reduced, their heart rate slowed, and their body temperature lowered. Some animals can remain in this state of dormancy for incredible lengths of time. Black bears may hibernate for 100 days or more, although they are likely to wake several times during that period. Other mammals can extend their hibernation even further—alpine marmots may hibernate for eight months at a time, allowing their body temperature to drop to approximately 40°F and their heart rate to slow to just three or four beats per minute.

Slowed heart rates and lowered body temperatures reduce hibernating animals' need for food and water to a bare minimum, often allowing them to survive entirely on stored fat reserves. Black bears, for example, require nothing but oxygen to survive the winter—their bodies rely on stored fats and recycled waste, eliminating the need for food or water. Other animals may wake occasionally to eat cached nuts or other food items. Indeed, hibernation is rarely continuous throughout the winter. Many small mammals rouse occasionally to boost their body temperature, eat food, or forage briefly. Some animals do even more—female black bears give birth to their cubs in the middle of their winter-long hibernation. When spring arrives, the cubs will be large enough to follow along with their mother as she forages and begins to rebuild her fat stores for another long winter's "nap."

Sleeping Through Cold, Heat, and Drought

Bears and squirrels are not alone in their slumbering feats. Many other species pass through states of dormancy that are similar

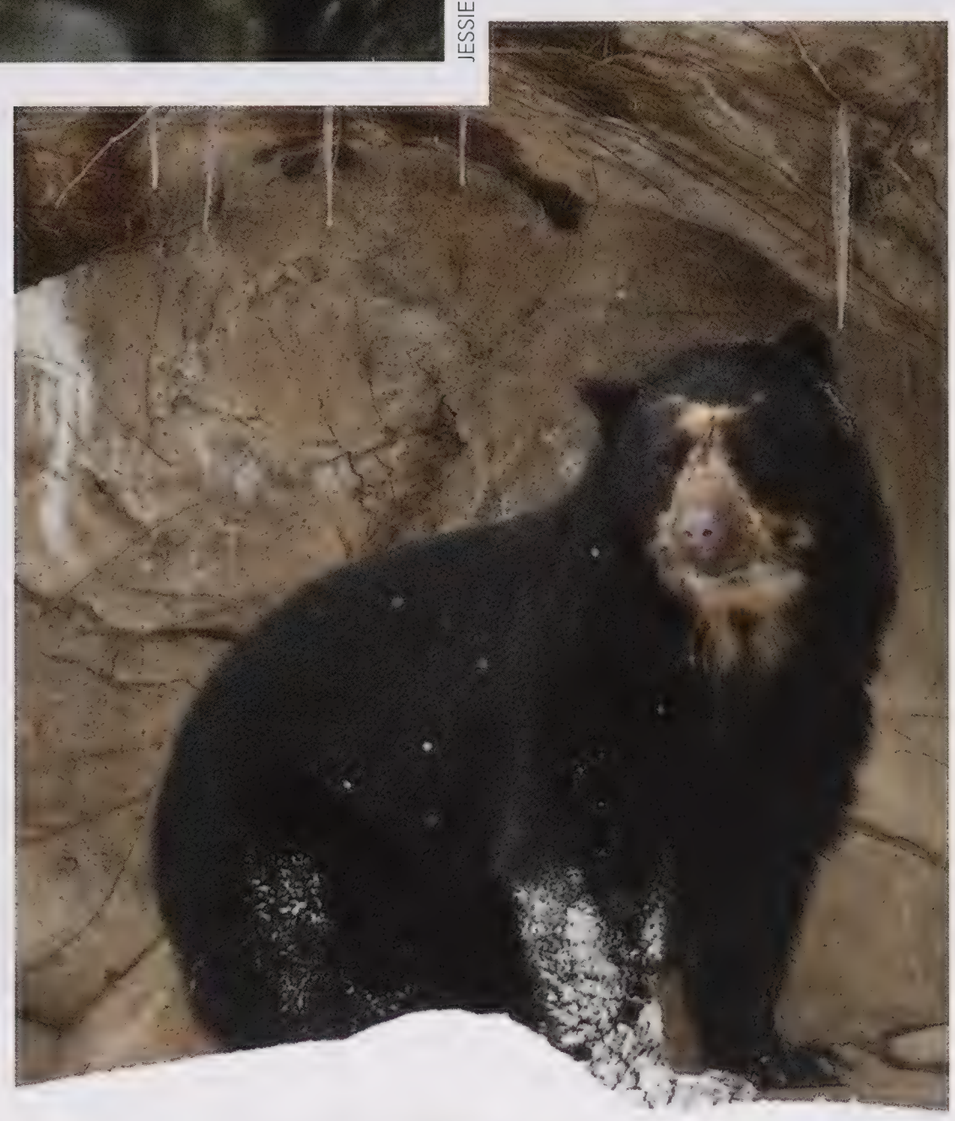
MEHGAN MURPHY/NZP

to hibernation. Reptiles brumate. Some desert-dwelling creatures estivate. And, of course, tenrecs practice torpor. While most hibernators and other dormant animals will spend weeks or months in dormancy, some species—including hummingbirds—use torpor as a way to conserve resources while sleeping at night.

Reptiles, snakes and amphibians have their own form of cold-weather dormancy—brumation. The general idea is the same, but the physiology of it varies a bit from hibernation. Most people think of reptiles, snakes, and amphibians as cold-blooded, but a more accurate name would be ectotherm, meaning "outside hot." Reptiles are not cold-blooded—their blood can be quite warm at times—but they do get their heat from outside their bodies. Thus the name ectotherm. Mammals, in contrast, are endotherms—they generate their own heat inside their bodies. This explains the subtle difference between hibernation and brumation; hibernating mammals alter their metabolism so that their body temperature drops, while reptiles' body temperature is determined by the surrounding air temperature. The difference is so subtle that some scientists use the term "hibernate" for both mammals and reptiles.

Long-term dormancy in response to hot or dry conditions is known as estivation. For estivating animals, the goal is the same as that of hibernating or brumating animals—to survive a period of reduced resources and increased risk—it's just that the risk here is heat rather than cold. Amphibians and fishes are the masters of estivation, although reptiles and mammals may also estivate. While most estivation lasts long enough for the animal to survive a single hot or dry season, spadefoot toads native to the southwestern United States are able to estivate for two years if conditions require. Some Australian frogs—aptly called water-holding frogs—can survive more than five years of estivation.

JESSIE COHEN/NZP



MEHGAN MURPHY/NZP

ABOVE: **Beautiful and venomous copperhead snakes are active year round in the Reptile Discovery Center.**

RIGHT: **Unlike North America's black bears, Andean bears do not hibernate.**

LEFT: **Giant pandas are often more active in the winter than the summer.**

ABOVE LEFT: **Although their wild relatives might hibernate, the Zoo's black-tailed prairie dogs often remain active in the winter.**

Torpor could be described as hibernation-lite. "It's not nearly as severe as true hibernation," explains Shaffer. "The tenrecs will spend most of our winter dormant, but they will wake up every once in a while to eat." Animals in torpor may lower their body temperature and slow their metabolism, but these periods of dormancy are shorter than in hibernation—torpor is essentially short-term hibernation. Like hibernating bears, the Zoo's torpid tenrecs slow their heart rate and allow their body temperature to drop. Unlike hibernating bears, the tenrecs will rouse from their torpid state on a somewhat regular basis to eat or drink. Although most species employ torpor as a winter survival mechanism, some—including the Zoo's tenrecs—rely on torpor as a way to survive hot and dry conditions.

Whatever the specifics, animal dormancy always serves the same purpose—surviving conditions that would otherwise be too harsh to survive.

Skipping Hibernation

Often—not always—hibernation is an optional affair. Hibernation, torpor, and other forms of dormancy are an evolved response to periods of reduced resources or exceptionally harsh conditions. Some animals hibernate through winter as a way to conserve resources when food is scarce and temperatures are cold enough to risk hypothermia. Other animals estivate through the dry season for similar reasons—when rains are absent, food and water can be near-impossible to find in some regions of the world. Remove these harsh conditions, and many of these animals will skip dormancy, opting for year-round activity.

Many of the Zoo's animals would hibernate or brumate through the winter months if exposed to the varying conditions of their natural habitat. The Reptile Discovery Center, for example, is well-populated with native North American

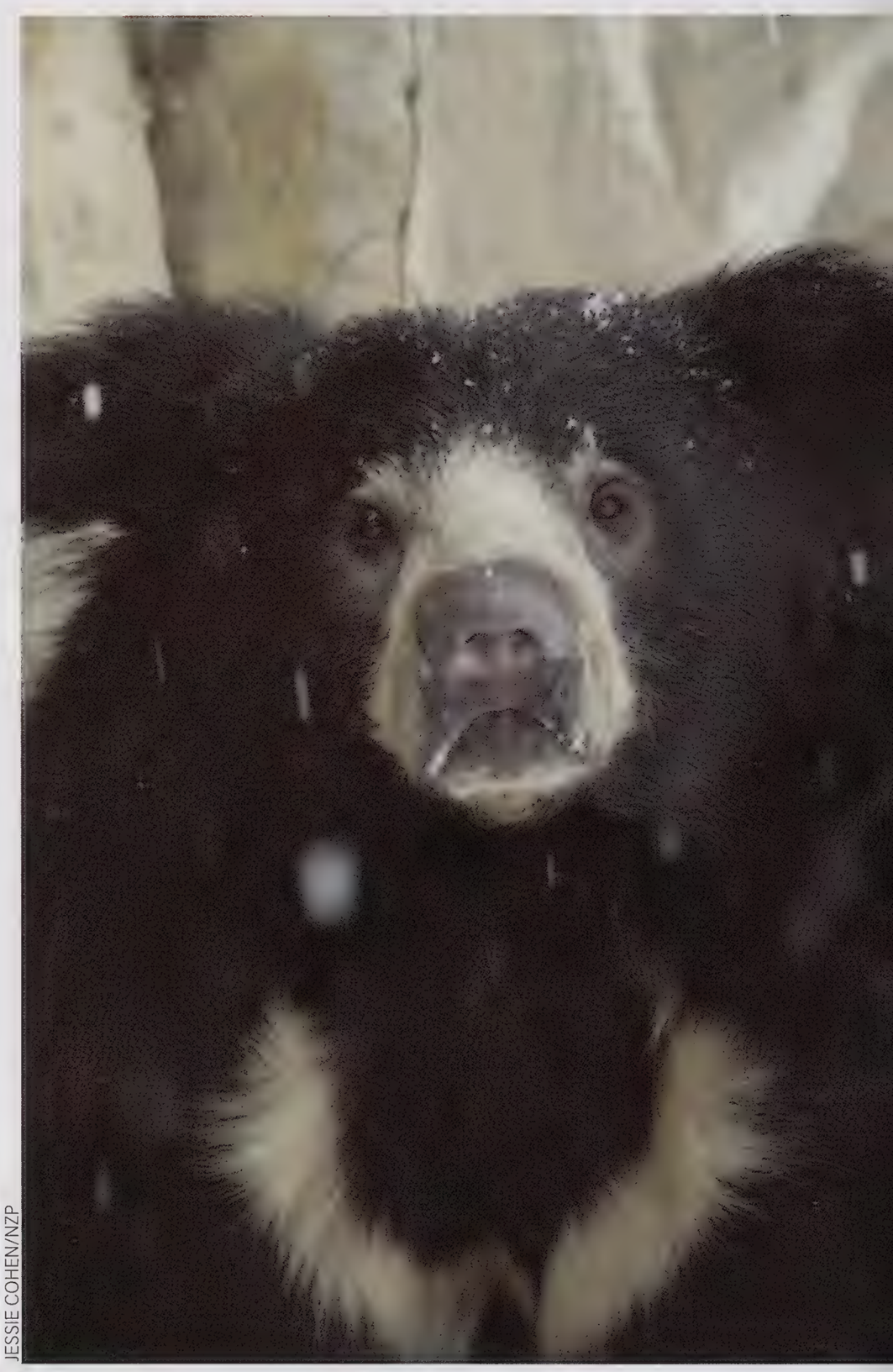
WINTER NAPS & SUMMER SLUMBERS

snakes, reptiles, and amphibians that naturally brumate during the winter. At the Zoo, however, these creatures stay active and alert all winter. "It's all about resources and energy expenditure," explains Asia Trail keeper Mindy Babitz. "If food is available year-round, there's no need to hibernate."

"We plan our collections to accommodate species that can acclimate to local conditions," explains Don Moore, associate director of animal care at the National Zoo. "For those animals that would hibernate naturally in the wild, they will often not hibernate if food is available, since one adaptive reason for hibernation is to get through a period of food shortage. So, if we provide food all winter for our animals that would normally hibernate, most will not hibernate here. This is a natural response."

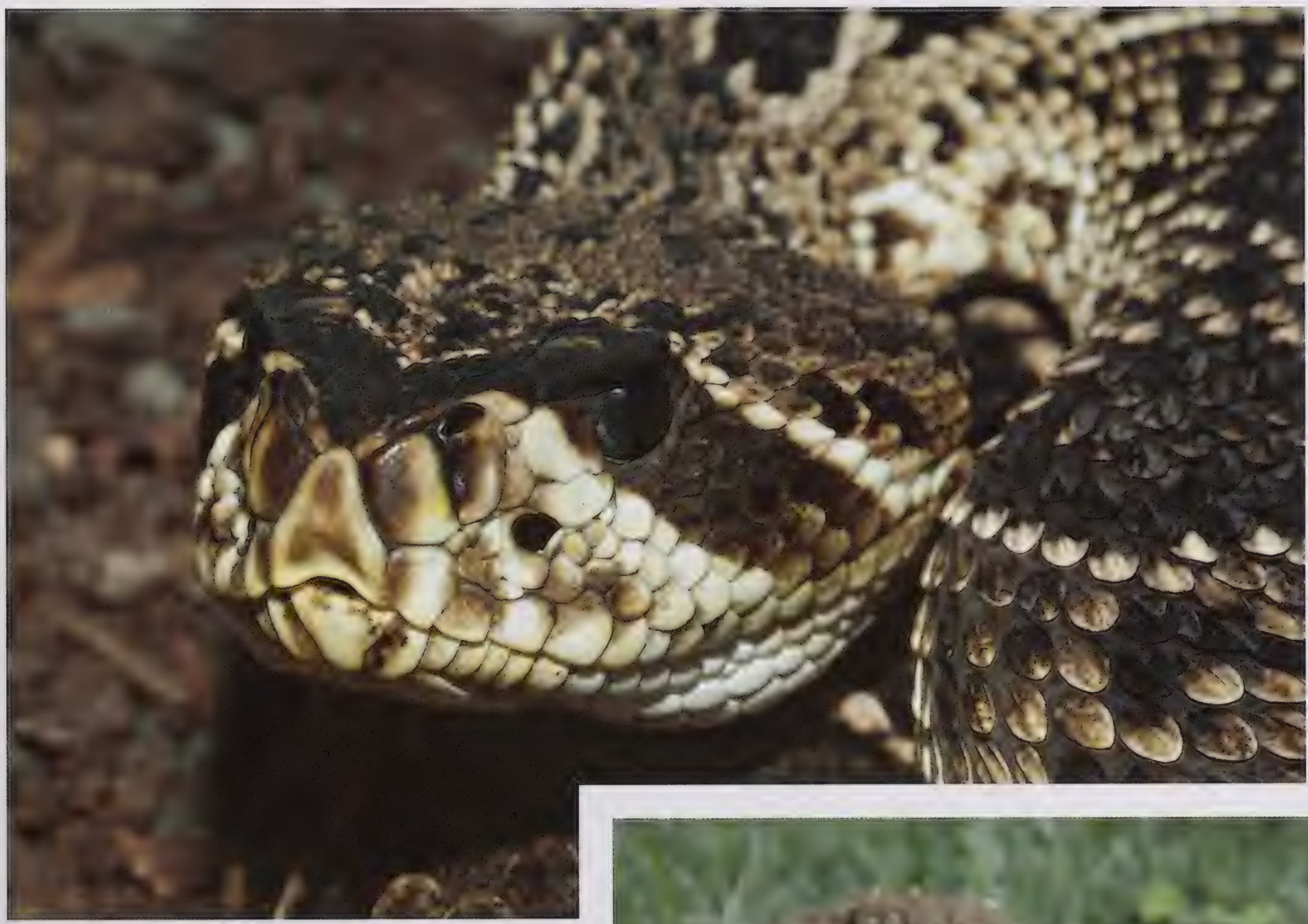
Not all zoo animals can be so easily tricked with year-round food and warmth, however. Madagascar hedgehog tenrecs' native habitat—the forests and savannas of Madagascar, off Africa's east coast—cycles through annual dry and wet seasons. Wild tenrecs may exist in a state of torpor for half the year, waiting out the dry conditions that make food and water difficult to find. The tenrecs at the Smithsonian's National Zoo were born in captivity, have never been to Madagascar, and have no need to enter a torpid state because they are given food and water year round. Yet, still, the tenrecs enter a state of torpor every fall.

"Our two here will go into torpor in late September or October," says Shaffer, who speculates that the tentrecs' torpor is triggered by seasonal changes in humidity levels in the Zoo's Small Mammal House. "The temperature stays pretty constant, and we have them on a normal light cycle. The only thing that



JESSIE COHEN/NZP

JESSIE COHEN/NZP



MEHGAN MURPHY/NZP

TOP: **Eastern diamondback rattlesnakes would brumate in the wild, but stay alert all year in the Reptile Discovery Center.**

BOTTOM: **The Zoo's black-tailed prairie dogs are facultative hibernators, meaning they can skip hibernation if conditions allow.**

OPPOSITE TOP: **The Zoo's sloth bears do not hibernate, but they do grow a heavier coat for winter warmth.**

OPPOSITE BOTTOM: **In the wild, greater Madagascar hedgehog tenrecs spend the dry season in torpor, waiting for the return of rain and food.**

JESSIE COHEN/NZP

may change is the humidity. It's just a lot more humid in the summer; it's D.C."

Although the tenrecs are the only species to enter full dormancy at the Zoo, other animals will change their behaviors with the seasons. The bears, for example. "Bears are very adaptable," says Babitz, who explains that the Zoo's sloth bears respond to winter's temperatures despite being a tropical species. "We see our sloth bears slow down considerably in the winter. They grow a heavier coat, which is not typically seen in their native India, and their appetites are also reduced."

Elsewhere at the Zoo, black-tailed prairie dogs are mostly awake and alert throughout the winter months, except for when they are not. "They don't fully hibernate," explains curator Craig Saffoe. "They do get far less active, spending the majority of their time underground. But, you can still see them occasionally poking their heads above ground, even in the cold."

This would be a different matter entirely if the Zoo housed white-tailed prairie dogs. As their names suggest, the two species differ in the color of their tails—black-tailed prairie dogs have a black tip to their tail that is missing from white-tailed prairie dogs. The species also differ in their hibernation habits. Black-tailed prairie dogs are facultative hibernators, meaning they hibernate when conditions require it. White-tailed prairie dogs, in contrast, are obligate hibernators—they must hibernate, even if temperatures are mild and food is readily available.

There are no obligate hibernators at the Smithsonian's National Zoo. With the exception of the Madagascar hedgehog tenrecs, the Zoo's animals are awake and alert throughout the winter months, just like the keepers and volunteers who care for them. SZ

— CRISTINA SANTIESTEVAN *is a freelance science writer and photographer, and an editor for* Smithsonian Zoogoer.

ANN BATDORF/NZP

WINTER FORECAST:

Snow, Cold, and Panda Bears

KATHARINE SUCHER

From snow days to tropical escapes, wintertime at the Zoo offers countless delights for visitors willing to venture out into the elements.

Winter visits to the Zoo may feature cold temperatures, blustery winds, and snowy eyelashes. But, that's no reason to delay your visit until the spring thaw. Pull on a warm coat, grab a snug cap, and bring your sense of adventure. If you've never seen a panda roll in the snow, this just may be your chance (weather permitting, of course).

"There's always something new to see as the seasons change," says Bird House keeper Lori Smith.

Less Is More

Regular zoo visitors know that the best weather brings the biggest crowds. Spring heralds a rush of school groups, while summer brings a steady stream of families and vacationers. During the winter, however, "visitation is at a trickle," says

senior manager for visitor education Laura Klopfer. This drop in visitation means smaller crowds and bigger benefits for wintertime zoogoers.

"In the winter, walkways and demos are less crowded," says Asia Trail keeper Mindy Babitz. "Despite the drop in visitation, we still have interpreters walking the trail so it's easier to find someone and ask questions. It's also easier to talk to keepers, especially when there are only a handful of visitors at demos."

Smaller crowds mean cold-weather visitors have more freedom to explore the Zoo at their own pace, and plenty of time to linger with their favorite animals or exhibits. There is no need to rush, because even the best vantage points for viewing and photography are less crowded. Gone is the summertime pressure to hurry along so that others can see the animals because

MEHGAN MURPHY/NZP

MEHGAN MURPHY/NZP

JESSIE COHEN/NZP

CLOCKWISE FROM TOP LEFT: **Asian elephants, red pandas, and North American river otters all adore playing, rolling, and lounging in freshly fallen snow.** PREVIOUS PAGE: **Tai Shan and Mei Xiang romp in a 2006 snowstorm.**

there is generally plenty of space for everyone.

"Visitors get a personal, more memorable Zoo experience in the winter," says giant panda keeper Nicole MacCorkle. "That's when I always try to convince my own friends and family to visit."

Panda Perks

As temperatures drop and the promise of snow hangs in the air, some animals change their looks or behaviors. Some birds, for example, molt into new plumage or feather colors in the winter. Other animals may become more active or exhibit behaviors not usually seen in the spring, summer, or fall.

Pandas, in particular, perk up in the colder months. Because these bears are native to the mountainous provinces of central China—where winters are longer and harsher than here in Washington, D.C.—giant pandas are well adapted for a life in the cold. In fact, they seem to prefer it. In the draining heat of summer, giant pandas (already relatively inactive animals) often choose to spend more time napping in the shade or cooling off in their air conditioned indoor space. In the winter, however, their insulated fur keeps them warm while their natural oils repel dampness from the snow. It's as if giant pandas are made for the snow.

> Like snow-soaked kids who refuse to come in for lunch, red pandas may even be reluctant to stop playing in the snow. "It's not unusual to find them running around in the snow with icicles on their whiskers," says Babitz.

The Zoo's giant pandas respond to snowfall with a mixture of wonder and cub-like delight. Mei Xiang and Tian Tian light up with energy—a marked change from their usual habits of eating and sleeping. "The element of snow will get the pandas to play," says MacCorkle. "The morning of the first snow, Mei Xiang and Tian Tian will immediately run outside and play in the snow. They won't even eat first."

Panda bears play just like children in the snow, and it's just as adorable as it sounds.

MEHGAN MURPHY/NZP

Even the kings and queens of Africa's savannas seem to enjoy winter's snow.

"Both Mei Xiang and Tian Tian have been known to toboggan and roll down the snow-covered hills in their yards," says MacCorkle. "They will climb trees, roll around the hill, and just act like cubs again." It's a rare and amusing opportunity to see the Zoo's pandas play like cubs. If you have a camera, you'll definitely want to bring it. Some visitors find their best Zoo photography comes from playful moments like these.

Though unrelated to giant panda bears, red pandas are from the same part of the world and respond with similar enthusiasm to cold, snowy weather. They are most active during breeding season, which takes place, appropriately enough, around Valentine's Day. A dense coat of fur—on both their bodies and the soles of their feet—equips red pandas for colder conditions, allowing them to stay outside for long periods of time even in cold, snow, or other precipitation. Like snow-soaked kids who refuse to come in for lunch, red pandas may even be reluctant to stop playing in the snow. "It's not unusual to find them running around in the snow with icicles on their whiskers," says Babitz.

Staying Warm

Other animals, including Asian elephants, lions, Przewalski's horses, cheetahs, and otters also appear to enjoy frolicking in the snow. Some animals, such as sloth bears, adapt to colder temperatures by growing a longer, shaggier coat in the winter. For animals that do not boast such adaptations, however, the Zoo lends a helping hand.

Most animals have access to an indoor heated den, and some exhibits also have heated features—such as hot rocks or heated grottos—that keep the animals warm while outside. The otters on Asia Trail, for example, are tropical animals. But thanks to a heated beach near the upper pool of their exhibit, these sun-lovers are able to stay outside in colder temperatures. Similarly, the flamingos have a heated pond that keeps them warm. On colder days, steam rises from the pond and envelops the pink birds, creating an unforgettable visual for wintertime Zoo visitors.

Sometimes, however, even animals that are adapted for the cold need a break from the elements. The air-conditioned grottos in the giant panda yard, for example, are turned off in the winter to allow the pandas a place to seek shelter from the cold. "The grottos in the giant panda yard shield the pandas and create a constant temperature," says MacCorkle. "The grottos aren't heated, they just break the wind."

MEHGAN MURPHY/NZP

Warming up to Indoors

The Zoo's animals aren't the only ones who sometimes want relief from the cold. If wintry winds are biting, visitors will find warmth and entertainment in one of the Zoo's seven indoor exhibits.

All of the Zoo's indoor exhibits are kept at regulated temperatures for the comfort and health of the animals and plants. In Amazonia, for example, visitors can trade D.C.'s wintry winds for the Zoo's 15,000 square foot rainforest. Tropical temperatures, poison dart frogs, titi monkeys, and more will soon have you forgetting about the chilly temperatures outside the building.

It's indoors where winter's reduced crowds are most obvious—and most welcome. During the more heavily-visited summer months, the Zoo's indoor exhibit spaces can fill rapidly with visitors seeking an escape from the heat or the chance to visit with a favorite animal. The winter's drop in visitation allows visitors to spend more time observing and learning about the animals in front of them without feeling rushed through the exhibit.

On a crowded spring or summer day, Smith notes, the inside of the Bird House can feel cramped by the volume of the crowd. Visitors tend to rush through, flocking to the freer space of the outdoor exhibit. In the winter, however, visitors have the opportunity to move through the Bird House at a more leisurely pace.

"Guests that visit during the winter months will find the Bird House to be more tranquil," says Smith. "Visitors are able to spend more time appreciating the exhibits and graphics in a more peaceful environment."

Intimate Moments

One of the greatest advantages of a wintertime visit is the opportunity for a more intimate experience with the Zoo's many animal demonstrations. For example, guests who fly through the Bird House in warmer weather may miss one of the Zoo's most unique features: the Meet-a-Kiwi program. Now in its twenty-fifth

JESSIE COHEN/NZP

TOP: **Flamingos keep warm in their heated pool.** ABOVE: **The Zoo's indoor exhibits offer visitors a break from the cold and sometimes the chance to see an animal up close, as with the popular Meet-a-Kiwi program.**

year, the Meet-a-Kiwi program introduces visitors to Koa—a North Island brown kiwi—every Monday, Wednesday, and Friday at 11 a.m. in the Bird House. For twenty minutes, groups of 10-15 visitors watch Koa eat, preen, and maybe nap while listening to a keeper talk about kiwis and conservation efforts to save them in New Zealand.

"Even in New Zealand you'd be hard pressed to find a program like ours that lets you get up close with a kiwi," says Kathy Brader, bird keeper and founder of the Meet-a-Kiwi program. "Our Meet-a-Kiwi program is truly a one-of-a-kind experience. You don't get to have those intimate experiences with wildlife very often."

Many people have a hard time recognizing personalities in birds, Brader notes. "But in the Meet-a-Kiwi experience, people say 'wow,' and recognize kiwi as living creatures. To care, you need to feel a connection with an animal. That's what happens during our program."

This connection with wildlife is part of what makes winter visits so memorable. Other indoor exhibits, including Amazonia, the Reptile Discovery Center, the Small Mammal House, Think Tank, and the Invertebrate Exhibit all offer their own engaging demos. You may choose to get wrapped up in the Invertebrate Exhibit's octopus talk and feeding demonstration, to wonder at the orangutans during the Think Tank's Great Ape Research demonstration, or to be tickled pink when introduced to a naked mole rat in the Small Mammal House. These are just a few of the many demonstrations offered throughout the day.

Winter's Wonders

It's true that the Zoo is a wonderful destination for a summertime afternoon. But, there are surprises to be found here every month of the year. Even during the coldest months, the Zoo is far from barren.

"I have never heard a visitor complain that their trip was ruined because of the cold," says Klopfer. SZ

—KATHARINE SUCHER *is a student at the College of William and Mary and a former Smithsonian's National Zoo intern.*

Cold Day. Warm Toes.

There are plenty of reasons to visit the Zoo in the winter, but the coldest days may freeze even the hardiest visitors in their tracks. Luckily it's easy to avoid this chilling fate with a few simple steps.

LAYER UP: Washington winters frequently dip down into the 30s, but Amazonia stays 80°F all year. Overdressed visitors may find themselves sweating in toasty indoor exhibits. Wear layers and adjust frequently to keep yourself comfortable no matter what the thermometer says, indoors or out. A wind-resistant top layer and a breathable bottom layer will help you beat the freeze and the heat.

EAT UP: A hot bowl of soup or a steaming cup of coffee can do wonders on a cold day. Luckily you don't have to go far to find these winter staples at the Zoo. Warm up from the inside out with a bowl of homemade soup or a cup of Smithsonian's Bird Friendly Coffee at Mane Grill. Or, head over to Panda Overlook Café for a full coffee bar. The Zoo's other dining options offer a variety of hot sandwiches and pizzas as well.

BOOT UP: Frozen toes are no way to have a good time at the Zoo. Be sure to wear thick socks and functional shoes that will keep your feet warm all day long. And keep the elements in mind—shoes with grip have the added bonus of protecting you from icy or slippery conditions. Many drug stores sell inexpensive foot or hand warmers that you can insert in your shoe or glove to keep your extremities extra warm.

SMITHSONIAN **zoogoer** kids CORNER

BEAST BITS

MARK VAN BERGH

Colorful Noise Maker

From far away, a wrinkled hornbill might look like a toucan. Get closer, however, and you'll see that these rainbow-colored birds have something toucans don't: a helmet-like structure on their beak called a casque. Wrinkled hornbills are hard to miss because they are bright and loud. Their deafening calls, which sound a bit like a harsh cough, can be heard for miles! ***Fly over to the Bird House to see the Zoo's wrinkled hornbill.***

Yeti crabs are white, fuzzy, and very strange. They live by hot hydrothermal vents along the ocean floor, and use their white hairs to catch their favorite food—bacteria.

fun fact

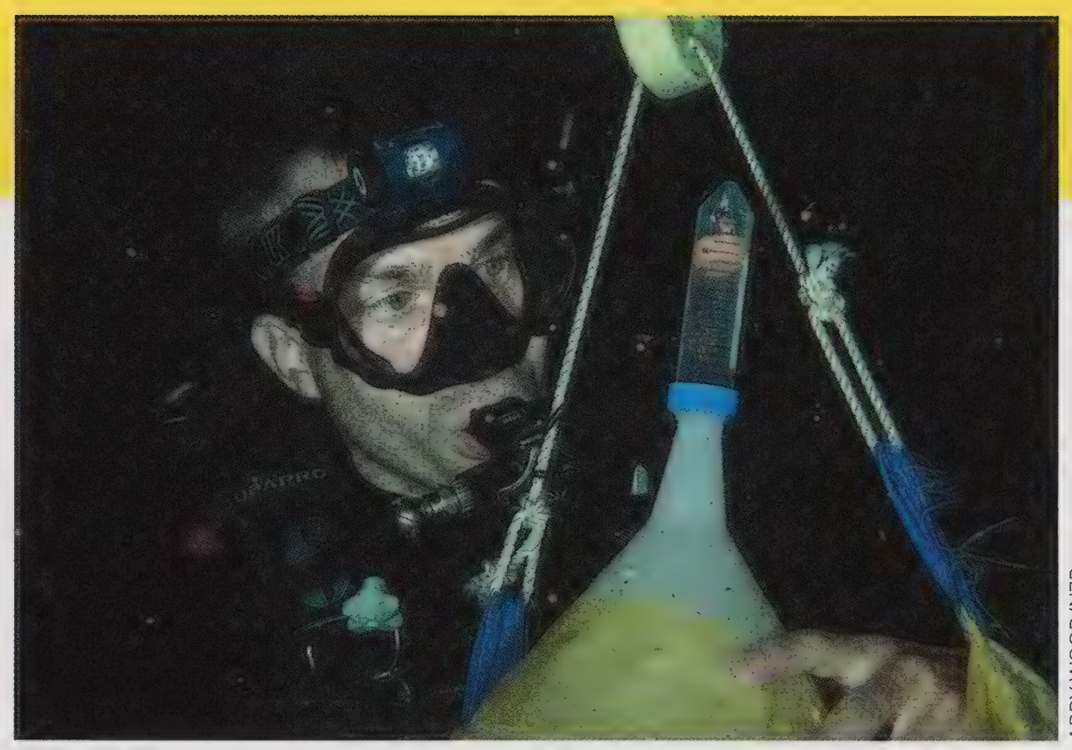
MEHGAN MURPHY/NZP

Little Armored One

Armadillos get their well-earned name from the Spanish word for "little armored one." While all armadillos wear plated armor, only the southern and Brazilian three-banded armadillos can enclose themselves completely in their own shell, rolling into an armored ball. This helps protect them against hungry predators, such as coyotes. Armadillos have poor eyesight, but make up for it with their keen sense of smell and long claws. This helps them sniff out and dig for their favorite food: beetle larvae, ants, and termites. ***You can visit a southern three-banded armadillo at the Small Mammal House.***

CORAL CARETAKER

The ocean has fascinated invertebrate keeper Michael Henley since he was a child, but it wasn't until a diving trip during graduate school that he decided to turn his love of the ocean into a career. As he was admiring life beneath the water's surface, Henley knew he had to become a part of such an amazing place.



ABBY WOOD/NZP

Now a keeper in the Zoo's Invertebrate Exhibit, Henley is still passionate about ocean life. Working with aquatic animals is quite different than caring for small mammals or large carnivores." I try to figure out how to recreate the ocean in a block of water," says Henley.

Under the Sea

Not all of the aquatic animals Henley cares for live in the same type of ocean environment. When Henley arrives at the Zoo, part of his daily routine includes making sure that the tropical and cold-water aquariums are all the right temperature. Henley's experienced eye can easily identify if something is wrong with one of the animals or if he needs to test the water. Henley also checks that the tanks' airflow and water pumps are accurately working before he and volunteers begin making the animals' food for the day.

MEHGAN MURPHY/NZP

A large part of Henley's job also includes educating others. "We're not just keeping these animals on display. Things like corals are disappearing from our planet very quickly; we need to educate the public about that and what they can do to help," says Henley.

Crazy for Corals

In addition to caring for many aquatic animals at the Zoo, Henley is dedicated to his research involving endangered corals. "Zoos and aquariums are increasingly becoming these Noah's Arks for the future by holding endangered species that might otherwise disappear from our planet. This can be any number of endangered birds, endangered amphibians, or big carnivores. Why not corals as well?"

Currently, Henley is working with two species of corals found between Florida and Brazil. Both are rapidly disappearing in the wild. He is working to establish a population of these corals at the Zoo so that if they ever become extinct in the wild they are not lost forever. Henley hopes that one day he has so many of these corals at the Zoo that he will be able to share them with colleagues at other zoos.

Ocean Office

Henley feels fortunate that he not only gets to work with the animals he is passionate about, but that he also frequently visits them in their natural habitats. "If you've never been on a coral reef, there's no other place like it in the world," says Henley.

His research has taken him to exotic locations around the world, including Puerto Rico, Singapore, and Australia. Henley says that his favorite destination is Carrie Bow Cay, a remote island off the coast of Belize. The island is small enough to fit inside a football field, but according to Henley, "there's something about that place that's just magical."

— WHITNEY JENCKS

CREATURE FEATURE

Silver SPLASH

Come face-to-fin with one of the world's largest freshwater fish.

BY PAMELA BUCKLINGER

ABBY WOOD/NZP

SMITHSONIAN Zoogoer kids CORNER

ABBY WOOD/NZP

Dino-MITE!

This fish makes a huge splash. Arapaima weigh in at more than 400 pounds, and can grow longer than eight feet in the wild. These flashy fish live in the Amazon River and the waterways that connect to it.

LIVING Fossil

Arapaima have survived for millions of years. Their ancestors swam with dinosaurs during the Jurassic period, and the species has changed very little in the millions of years since then.

Fresh AIR

Arapaima gills are too small to get all the oxygen they need from water. Instead, their swim bladders (air-filled sacs that usually help fish float) have evolved to act like lungs. Every 18 to 20 minutes, the fish surface to take big gulps of air.

FOOD on the Fly

These fish are carnivores. Not picky eaters, they snatch up any small fishes that swim by. They also snack on birds. Yes, birds. Arapaima can jump out of the water to catch unsuspecting feathered treats. Once they catch something, the fish have a unique way of eating it. Their tongues have built-in teeth, which crush prey against the roof of their mouths.

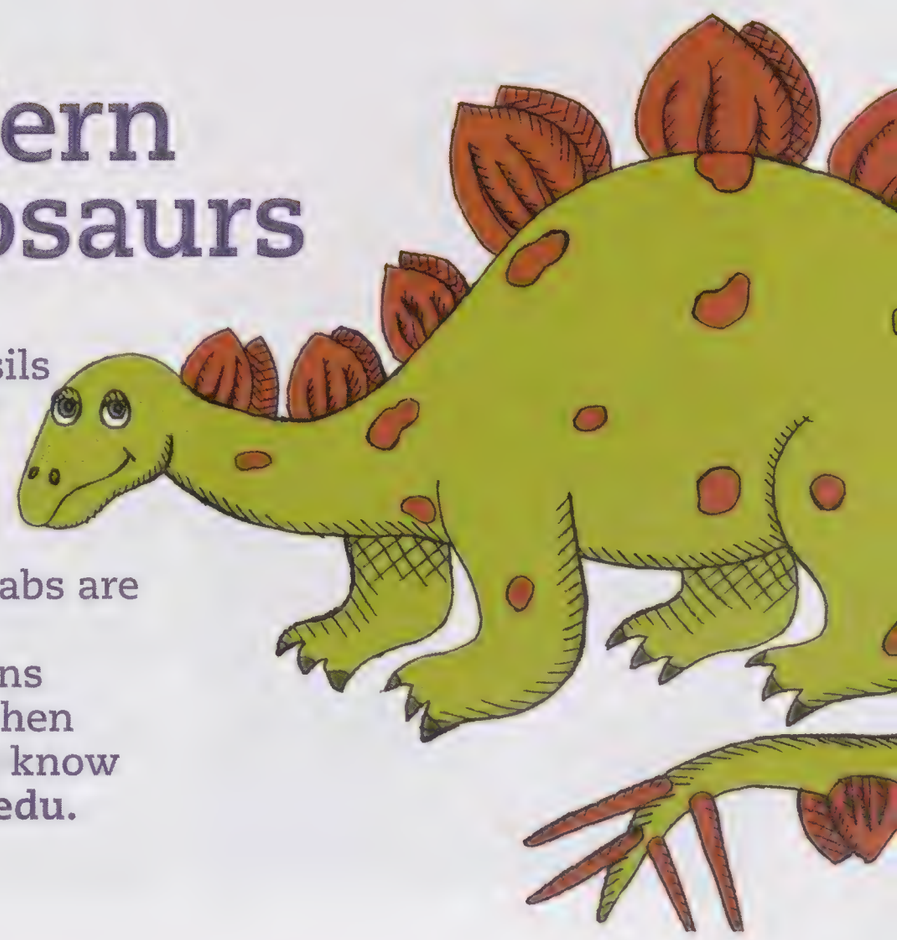
Mouth GUARDS

Arapaima are good parents. Once the female lays her eggs, both parents guard them until they hatch. After hatching, dad keeps his eye—or mouth—on the fry. When predators are near, the babies swim into their father's mouth for protection. At about three months old, young arapaima are ready to go out into the world on their own.

FACE the Fish

Come to the Zoo's Amazonia Exhibit to learn more about these creatures, see them up close, and discover what the Zoo is doing to protect them in the wild.

YOUR TURN Modern Dinosaurs



Arapaima are called living fossils because they look very similar to their ancestors, who swam with dinosaurs, but they are still alive today. Crocodiles, cockroaches, and horseshoe crabs are also considered living fossils.

Can you think of three reasons why these animals survived when dinosaurs went extinct? Let us know what you learn at **zoogoer@si.edu.**

FONZ RESOURCES

fonz.org

Member/Donor Information
202.633.2922

Special Events
202.633.4470

Corporate Events
202.633.3045

Camps and Classes
202.633.3024

Volunteer Services
202.633.3025

Comments? Questions?
Please email us at
fonzmember@si.edu

Not a FONZ member yet?
Call 202.633.2922
or go to
fonz.org/join

WELCOME NEW BOARD MEMBERS

Congratulations and a hearty welcome to our new board members—David T. Bell, Laura L. Monica, and Peter Smith, Jr.—and welcome back to our re-elected board members, Enoh Ebong, Mark Rothman, and Bryan Sivak, treasurer. Our 2014 FONZ board officers include John Ring as board chair, Timothy Lynch as vice chair, Brian Sivak as treasurer, and Sheila Walcoff as secretary. We'd also like to extend a fond farewell to departing board members Thor Cheston, David Harrison, and Anne Salladin. Thank you for your service.

MEHGAN MURPHY/NZP

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Statement of Ownership—
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	AVERAGE FOR EACH ISSUE	ISSUE NEAREST TO FILING DATE
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Paid in-county subscriptions	5,908	5,881
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Other classes of USPS mail	53	45
Total paid/requested circulation	38,161	37,336
Free distribution by mail	200	200
Free distribution outside mail	800	1,100
Total free distribution	1,000	1,300
Copies not distributed	339	364
Total distribution	38,261	38,636
Percent paid/requested circulation	98%	98%

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SAFARI DAY CAMP

Send your child on safari with the Zoo this spring or summer

Safari Day Camp invites children to explore the lives, habitats, and conservation of animals around the world. Weeklong sessions include exciting hands-on activities, craft projects, science experiments, and walks through the Zoo (but no direct contact with animals).

Safari Day Camp is offered over the spring, summer, and winter school breaks as Spring Safari Day Camp, Summer Safari Day Camp, and Snow Safari Day Camp.

MEHGAN MURPHY/NZP

GENERAL INFORMATION

Camp sessions are grouped by grade level: K–1, 2–3, 4–5, and 6–7 (summer sessions only). Summer campers should register for the grade level they will be entering in the fall, while spring and winter campers should register for their current grade level.

2014 DATES AND TIMES

Spring Safari Day Camp is offered in a single weeklong session from April 14–18.

Summer Safari Day Camps are offered in multiple weeklong sessions from June 23 to August 15. A single camper may register for multiple Summer Safari Day Camp sessions through the summer (only one session per week).

Snow Safari Day Camp is offered in a single four-day session from December 29, 2014 to January 2, 2015, excluding January 1. (Plan ahead: FONZ member registration for Snow Safari Day Camp begins October 28, 2014.)

All Safari Day Camps are held Monday to Friday* from 9 a.m. to 3 p.m. Campers must be dropped off between 8:45–9 a.m. and picked up at 3 p.m. Before-camp care (8–8:45 a.m.) and after-camp care (3–6 p.m.) is available for an additional fee for a limited number of campers. An additional fee will be charged for pick-up after 6 p.m.

LOCATION

Drop-off for all camps is in the Zoo's Visitor Center auditorium.

Pick-up for all camps is in Parking Lot A. Campers participating in after-camp care must be picked up in the Visitor Center.

FEES

Camp fees include a daily snack with juice box, and a ride on the Speedwell Foundation Conservation Carousel.

Weeklong camp sessions*

$380 for FONZ members

$475 for non-members

Before-camp care*

$100 per week

After-camp care*

$175 per week; an additional fee applies for pick-up after 6 p.m.

**Summer Safari Day Camp is offered Monday–Thursday for the week of June 30 to July 3 only. A reduced fee of $305 (FONZ members) or $382 (non-members) applies for this four-day session. Before-camp care ($80) and after-camp care ($140) is also offered at a reduced rate for this single week.*

REGISTRATION

Limited space is available for each camp session and each week's before-camp and after-camp care. Register early to ensure your child's spot in his or her first choice.

Register online at **fonz.org/camps**

January 28, 10 a.m.

Summer Safari and Spring Safari priority registration begins for Premier+ FONZ members. Upgrade your membership at **fonz.org/join** to qualify.

February 4, 10 a.m.

Summer Safari and Spring Safari registration begins for all FONZ members.

February 18, 10 a.m.

Summer Safari and Spring Safari registration begins for all non-members.

CANCELLATION AND TRANSFER POLICIES

Requests must be received via email. No refunds or changes will be made with less than four weeks notice.

Cancellation requests received at least four weeks prior to the start of the session will receive a 75% refund.

Transfer requests received at least four weeks prior to the start of the session will be charged a 10% administrative fee.

FONZ
2014 SPRING CAMP GUIDE

One weeklong session from April 14–18, 2014, for children in grades K–5.

>> GRADES K–1

Creature Features

We meet zoo animals that are experts at the game of hide and seek, and learn how spots, stripes, and colors help some animals find dinner and keep others from being on the menu.

Where the Wild Things Are

A wonderful world unfolds in this five-day investigation of the animal kingdom. Each day, we study a different type of animal, and learn about the wild places they inhabit.

>> GRADES 2–3

Dr. Zoo-euss

Turtles, elephants, and tigers, too. Where can you find them? At the National Zoo! We are sure to have a fabulous time, making crafts and reading rhymes. So come to the park, take a look, and see an animal from a Dr. Seuss book!

Extreme Animal Athletes

Animals are built for survival. They can live deep in the sea, high in the sky, or in the driest desert. We will learn about the amazing adaptations that make these animals winners.

>> GRADES 4–5

Junior Marine Biologist

From sea lions and otters to octopods and crabs, marine biologists dive in to investigate. We discover the Zoo's bubbliest animals and learn about the Zoo's efforts to keep them safe.

Use code **ELEPHANT2014** to claim your FONZ member discount for Spring Safari and Summer Safari Day Camps. Call 202-633-3024 for assistance.

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FONZ
2014 SUMMER CAMP GUIDE

Multiple weeklong sessions from June 23 to August 15, for children entering grades K–7.

>> ENTERING GRADES K–1

Mighty Minis
June 23–27
Zoo Olympics is about more than feats of enormous strength. We meet the small but mighty animals at the National Zoo and discover what makes these mini stars so spectacular! (Formerly Team Tiny.)

Water Winners
June 23–27
We don't need a swimsuit to learn about the amazing aquatic world. Hold your breath as we meet the Zoo's wettest friends. From playful otters to a curious octopus, we learn about many creatures that inhabit the world's waters. (Same as FantaSEA, July 28–August 1.)

Creature Features
June 30–July 3
We meet zoo animals that are experts at the game of hide and seek, and learn how spots, stripes, and colors help some animals find dinner and keep others from being on the menu.

Zoo-cieties
June 30–July 3
One of a kind? Part of a pack? Some animals live in groups while others prefer to go it alone. We study the amazing adaptations of our most social butterflies and more solitary creatures.

International Monkey Business
July 7–11
There will be plenty of monkeying around in this class as we travel from jungle to jungle to learn about our primate cousins, from little monkeys to great apes!

Longitude and Catitude
July 7–11
The Zoo is always purring with excitement. We meet and learn about lions, tigers, cheetahs, and more through Zoo walks, science projects, and purr-fect crafts.

Over the Hedge
July 14–18
We're digging up a good time, discovering the Zoo in our backyards. After learning about our feathered, furry, and swimming neighbors, we head out into the Zoo to meet the critters of American Trail.

Ice Age
July 14–18
Extinct species have left their mark in modern animals. We will see the ancestors of Manfred, Sid, and Diego, and will explore evolution as we discover today's dinos. No bones about it!

Small Wonders
July 21–25
These animals may be teeny but that doesn't mean they aren't tremendous fun! We will meet the Zoo's small mammals and learn why great things come in small packages.

Birds of a Feather
July 21–25
Everybody knows that bird is the word; in this camp, we find out why. We will explore the world of our high-flying friends, then go for a bird watch to see some for ourselves!

Nur-Zoo-ry Rhymes
July 28–August 1
Dogs, spiders, and piggies, too. Where can you find them? At the National Zoo! We are sure to have a fabulous time, making crafts and reading rhymes. So come to the park, take a look, and see an animal from Mother Goose's book!

FantaSEA
July 28–August 1
We don't need a swimsuit to learn about the amazing aquatic world. Hold your breath as we meet the Zoo's wettest friends. From playful otters to a curious octopus, we learn about many creatures that inhabit the world's waters. (Same as Water Winners, June 23–27.)

Spider Kids
August 4–8
In this camp we're surfing a different kind of web! We will discover the world of our not so itsy-bitsy friends and learn just how amazing they are. This class will stick with you!

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X-Men
August 4–8
What if you had ears three feet wide or a full rack of antlers? We will observe animals from head to toe and learn about their x-traordinary features. Then we will create our favorite animals' ears, nose, tail, or toes, and try them on for size!

Where the Wild Things Are
August 11–15
A wonderful world unfolds in this five-day investigation of the animal kingdom. Each day, we study a different type of animal, including mammals, birds, and reptiles, and learn about the wild places they inhabit.

Babar the Elephant
August 11–15
Let's pack up our trunks and follow the herd! We're learning about the largest living land mammal—elephants! We will study their fascinating adaptations and welcome the National Zoo's new elephants to their home in the Elephant Community Center.

>> ENTERING GRADES 2–3

Golden Medal Tamarins
June 23–27
We will monkey around all week, getting to know our itsy-bitsy monkeys and awesome apes. We will learn about the O Line and how it allows our orangutans to travel high above the Zoo. Plus, there's no denying you'll adore our golden lion tamarins!

Leapers Creepers
June 23–27
We'll visit the Zoo to meet fascinating creatures behind every corner. From poison dart frogs to the Komodo dragon, we'll slither on over to the Reptile Discovery Center, learn about the global amphibian crisis, and hop into action to save our froggy friends!

Critter Champions
June 23–27
The National Zoo is home to many animal winners: the fastest, the strongest, the biggest, the smallest. We will learn about these superstar animals and then go for the gold ourselves!

Zoo MD
June 30–July 3
What does it take to care for a toothy tiger or slimy salamander? Zoo veterinarians have one of the toughest jobs around. We will visit How Do You Zoo?—our one-of-a-kind role play exhibit—and practice caring for the Zoo's animals (no direct contact with live animals).

Home Sweet Habitat
June 30–July 3
There's no place like home! We will visit the Zoo and explore the homes and habitats of our natural builders. We'll learn more by digging into the animal world before becoming busy bees, beavers, and birds ourselves. Join the crew!

Wilderness Explorers
July 7–11

Join us as we suit UP for an adventure as Zoo Wilderness Explorers. We will earn badges as we help animals at the Zoo and around the world. We may even discover the creature of Paradise Falls. Adventure is out there!

Out of Africa
July 7–11

There's no need for a passport when we can explore the savanna at the National Zoo! We make crafts and play games as we learn about African animals and culture.

United States of Animals
July 7–11

This land was made for you and me… and the animals! We explore the Zoo in our own backyards and say "hello" to our neighbors on the American Trail, including gray wolves, sea lions, and the bald eagle. Then we learn how we can help keep America beautiful.

Kung Fu Panda
July 14–18

Help kick extinction! We will join the Furious Five and earn a black belt in conservation. We'll travel Asia Trail and uncover the mystery of the giant panda, clouded leopard, red panda, and more. This camp is sure to be a knockout!

The Lion King
July 14–18

It's time for the mane event! We're beaming with pride over our lions! We will learn about the kings and queens of the National Zoo, and will visit with their cat cousins: cheetahs, tigers, and leopards.

Moo at the Zoo
July 21–25

Let's spend the week as Old MacDonald. We'll meet a keeper and plow headfirst into learning how to care for cows, goats, donkeys, and more at the National Zoo's Kid Farm, sponsored by State Farm®.

Great to Be a Primate
July 21–25

We'll go ape in this class! We will learn all about our primate cousins—monkeys, apes, and prosimians—meet the Zoo's collection, and learn why it is great to be primate.

Fantastic Frogs
July 21–25

It's easy being green. Let's jump to it and learn what we can do save the frogs. You'll be hoppy in this class!

Zoo Dunnit
July 28–August 1

Let's grab our binoculars and venture through the Zoo to explore clues about the animal kingdom. We'll test our newly acquired knowledge of Zoo animals and scientific methods to solve the mystery and claim the reward!

Fairy Tails
July 28–August 1

We're jumping into the pages of our favorite "tails." We will meet Jack's giant (octopus), huff and puff with the big bad wolf, pucker up to frogs, and pay a visit to the home of our three bears. Let's become a part of the story and learn about the real animals behind the critter characters.

Swamp Things
August 4–8

Many people think crocodiles, snakes, and creepy crawlers have a serious yuck factor. We'll get down and dirty learning about their fascinating behavior and why it can be great to be gross.

Superman-imals
August 4–8

Let's find the nearest phone booth and change into our capes before meeting the Zoo's most incredible creatures! We will join the squad as we uncover animals with powers of speed, strength, flight, and more, and will then transform into heroes ourselves!

Aquaman
August 4–8

Join us as we dive deep into exploring our underwater animals—otters, octopus, turtles, and more. We'll sea for ourselves; it's sure to be a splash!

Charlotte's Web
August 11–15

Terrific is not only Charlotte's word for Wilbur—it's how you'll feel about this class! We will meet Wilbur's cousins—Ossabaw Island hogs—learn about Templeton's smarts, and admire Charlotte's talented distant relatives, the tarantulas.

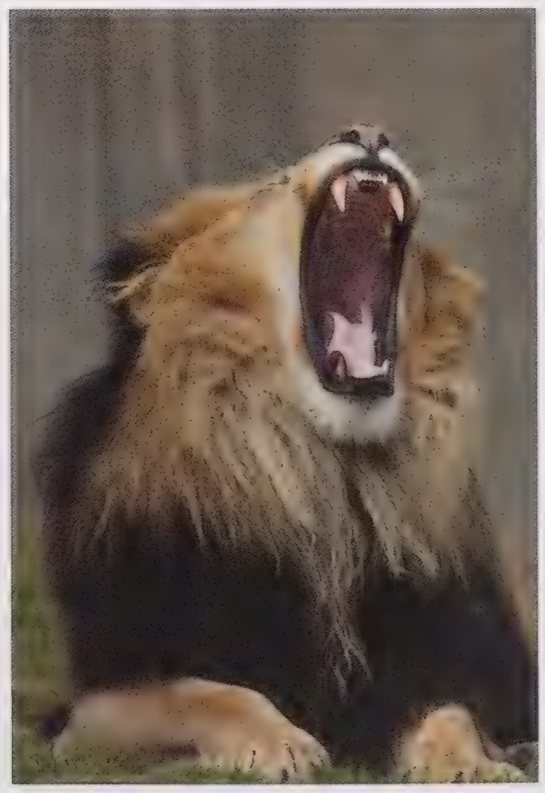
Dr. Zoo-euss
August 11–15

Turtles, elephants, and tigers, too. Where can you find them? At the National Zoo! We are sure to have a fabulous time, making crafts and reading rhymes. So come to the park, take a look, and see an animal from a Dr. Seuss book!

>> ENTERING GRADES 4–5

Extreme Animal Athletes
June 23–27

Animals are built for survival. They can live deep in the sea, high in the sky, or in the driest desert. We will learn about the amazing adaptations that make these animals winners.



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Race for Conservation
June 23–27

Calling all junior environmentalists! Let's meet some of the Zoo's endangered animals and learn about the programs in place to save them. The National Zoo is doing its part, but needs our help. Let's discover how to make a difference!

Feast with the Beasts
June 30–July 3

The animals want to have us for dinner! No worries. We aren't on the menu; we're the guests! We will learn about Zoo nutrition and animal diets, meet the Zoo's nutritionists, and take a behind-the-scenes tour to see what's on the menu.

The Great Migration
June 30–July 3

Think walking up the Zoo's hill is bad? Imagine fluttering for nearly 3,000 miles! Many animals travel long distances to find food and shelter. Let's pack our bags and take a journey across the plains, oceans, and skies to study these adventuring animals on their quest for survival.

Amazing Asia
July 7–11

Let's take a wild expedition to the world's largest continent while learning about the animals that call Asia home. We'll explore the island of Sumatra, the cloud forests of China, and many habitats in between. We don't want to incite panda-monium, but this camp is seriously amazing!

Amazon Adventure
July 7–11

Bom Dia! We're headed on a South American adventure. We'll spend a week in the rainforest and get face-to-face with some of the world's most intriguing creatures, such as monkeys, frogs, and giant fish. We go high in the canopy and down to the forest floor on a wild trip that we'll never forget.

Dr. Zoolittle
July 14–18

What does it take to care for a toothy tiger or slimy salamander? Zoo veterinarians have one of the toughest jobs around. We will visit How Do You Zoo?—our one-of-a-kind role play exhibit—and practice caring for the Zoo's animals (no direct contact with live animals).

The Lorax
July 14–18

The National Zoo is a leader in saving endangered species like giant pandas, Asian elephants, and clouded leopards. We will meet experts in the field of animal science and species survival, discover the important work they do, and learn how to "speak for the trees."

FONZ
2014 SUMMER CAMP GUIDE

Calling All Cats
July 21–25

Here's a camp with cattitude. We'll hunt with lions, pounce with tigers, race with cheetahs, and leap into fun with clouded leopards. Join us as we meet all of the Zoo's favorite felines and learn how to protect them.

No-Bone Zone
July 21–25

Over 90 percent of the Earth's animals do not have bones. We'll loosen up and discover the incredible diversity of animals that belong in the no-bone zone.

Mythical Creatures
July 28–August 1

Centaurs, dragons, and unicorns can all be found at the National Zoo (all you need is a little imagination). Join us as we take a magical journey with the fantastic creatures from the world's legends and myths, and visit the real animals behind the mysteries.

Things That Go Bump in the Night
July 28–August 1

Who starts stirring when the sun goes down? Let's meet the animals that lurk in the shadows and learn about their nocturnal adaptations.

The Planeteers
August 4–8

Planeteers unite! In the race against extinction, "endangered" means there is still time. Let's be part of the solution! We will join forces with Captain Planet, combine our powers, and learn how to make a difference! (Formerly Captain Planet.)

Captain America-n Trail
August 4–8

Avengers assemble! Let's join our fellow superheroes as we race to protect the animals in our own backyard. Bald eagles, seals, and gray wolves need our help. We will shield them from extinction and save the day!

Harry Otters and the Chambered Nautilus
August 11–15

Let's take our gillyweed and dive into a wet world to meet the Zoo's magical aquatic creatures, including otters, octopus, and giant arapaimas. No wand required!

The Wizards of Oz
August 11–15

Lion and tigers and bears, oh my! We will follow the National Zoo's red brick road to explore the exotic lands that these and many other animals call "home."

>> ENTERING GRADES 6–7

Critter Twitter
June 30–July 3

Grunt and squeak and squawk with the animals! Let's explore the world of animal linguistics and learn how to communicate with all of your senses. We'll speak with a species and become fluent in a very foreign language.

Twilight
July 14–18

As the sun sets, a wolf howls, lemurs swing, and alligators hunt. Let's explore the wonder of crepuscular animals—the species that are active at dusk and dawn—and learn about the adaptations that help them survive. Then we'll decide. What team are we on?

Operation Conservation
July 28–August 1

Let's be the experts! The National Zoo is a leader in saving species. We will learn about the Zoo's efforts to rehabilitate black-footed ferrets and Panamanian golden frog populations. Then, we'll do our research, complete experiments, and create our own plan to save an endangered species.

Hunger Games
August 11–15

It's survival of the fittest in this dog-eat-dog world. We will investigate evolution, learn how animals developed, and create our own theory on the future of a Zoo species. Will our species survive? How can we help?

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FONZ NATURE CAMP

Set your child free to run wild this summer

Learn more and register online: fonz.org/camps

FONZ Nature Camp welcomes students entering grades 5–10 to one-week and two-week overnight camps at the Smithsonian Conservation Biology Institute (SCBI) in Front Royal, Virginia. Adventure awaits!

Through hands-on investigation, campers explore and discover local and global wildlife, conservation initiatives, research projects, and more. Campers learn to identify flora and fauna, monitor biodiversity, and observe ecological systems at work. Throughout their week-long experience, campers will have the opportunity to engage with leading Smithsonian scientists during behind-the-scenes tours, lectures, and casual conversations.

sleep.

search.

save.

DATES

July 6–12
One-week session for campers entering grades 5 and 6.

July 13–19 and July 20–26
One-week sessions for campers entering grades 7 and 8.

July 27–August 9
Two-week session for campers entering grades 9 and 10.

CAMP LIFE

Campers spend their mornings hiking SCBI's hills, exploring the forest, and tracking native wildlife. After lunch, campers venture behind-the-scenes with SCBI scientists and animal keepers and participate in educational activities, such as wilderness survival. Free time may be spent relaxing with friends, playing kickball, or exploring SCBI's campus.

Special activities include an overnight campout on Race Track Hill, trips to a local swimming pool, and a Friday Night Talent Show.

REGISTRATION

January 28, 10 a.m.

Priority registration begins for Premier+ FONZ members. Upgrade your membership at **fonz.org/join** to qualify.

February 4, 10 a.m.

Registration opens for all FONZ members.

Use code **CHEETAH2014** to claim your FONZ member discount. Call 202-633-3037 for assistance.

LOCATION

FONZ Nature Camp is held in Front Royal, Virginia, at the Smithsonian Conservation Biology Institute (SCBI). Situated on over 3,200 acres within the Shenandoah Valley, SCBI is internationally renowned for its conservation work, veterinary science, and reproductive research, as well as its success breeding numerous threatened and endangered species. SCBI is typically closed to the public.

STAFF

All camp counselors have a background in the biological sciences and outdoor or informal education. All camp staff are certified in CPR and first aid.

MEHGAN MURPHY/NZP

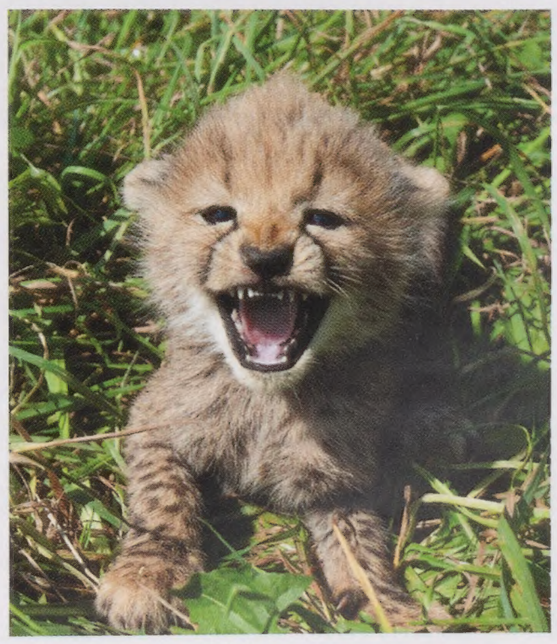
MEHGAN MURPHY/NZP

CANCELLATION AND TRANSFER POLICIES

Requests must be received via email. No refunds or changes will be made with less than four weeks notice.

Cancellation requests received at least four weeks prior to the start of the session will receive a 75% refund.

Transfer requests received at least four weeks prior to the start of the session will be charged a 10% administrative fee.



MEHGAN MURPHY/NZP

DIANE ELKINS

Tantalizing Tentacles

"I love the sea nettles because it is like watching living art," says photographer Diane Elkins. "It's just mesmerizing to watch the color, light, line, and motion."

Elkins and her father publish e-books that teach early-learning skills, including letters and numbers. She knew she wanted a photograph of a jelly—often called jellyfish. "The Zoo talks about a certain animal being genetically valuable," says Elkins. "I also look at them as being phonetically valuable! We'll probably use this picture in a book on compound words, along with dragonflies, seahorses, and others."

Technical Notes —

CAMERA: CANON EOS M; EXPOSURE: 1/100 SEC AT F/5; FOCAL LENGTH: 22 MM; ISO: 800

Submit Your Photos!

Smithsonian Zoogoer welcomes FONZ members' submissions of photos taken at the Zoo. Please send photos to Zoogoer@si.edu. We will contact you if we are able to use your picture for the Zoo View page.

Join the Club!

Membership in the FONZ Photo Club is open to photographers of all skill levels. The group meets monthly to hear guest speakers and to share and discuss members' work. Learn more at **fonz.org/photoclub**.

You are my main squeeze.

SAY IT WITH AN ADOPT A SPECIES PACKAGE! This Valentine's Day show that special someone how much you love them with a gift that supports science, animal care, medicine, habitat improvement, and enrichment at the National Zoo. **Order today at fonz.org/adopt.**

FONZ
Friends of the National Zoo

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Thank you for being a FONZ member.
Your membership supports animal care, science, conservation, and more.

SMITHSONIAN'S NATIONAL ZOO 125 YEARS

To celebrate our 125th anniversary and all of our scientific accomplishments, we're reconnecting with our first conservation success by bringing bison back to the Zoo. Help us demonstrate that together we accomplish amazing things!

Donate online:
fonz.org/125bison